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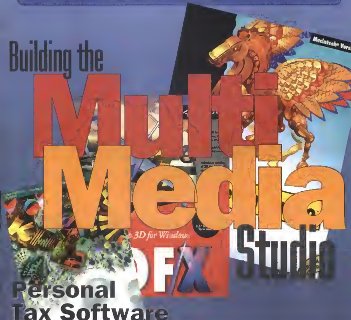

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What can I record and is CD ROM using a CD Recorder?

FROM THE EDITOR

Intranets

Don't get caught unaware. The big news for companies across Canada is intranets By now you have heard all about the Internet, the worldwide network of computers But have you heard of intranets yet?

The idea behind intranets is to use Internet technologies to create private networks within companies to communicate important corporate information to people on staff All the hoopla that surrounded the public "discovery" of the World Wide Web is now being quietly followed by internal corporate Web creation.

At its most basic level intranet is a term used to describe the use of Internet software and hardware inside businesses, governments and schools, rather than for connection to the global Internet The idea is to transparently deliver the huge amount of internal information resources of an organization to each employee's desktop with minimal cost time and effort.

The idea is to transparently deliver the huge amount of internal information resources of an organization to each employee's desktop with minimal cost, time and effort

The ability to instantly distribute a set of documents to everyone in a company who needs it is a major technological innovation This is something to get excited about for management in almost any sized company These documents can include any information in an electronic form, such as database data sound, images video and software.

Homegrown solution

Even within a company the size of Canada Computer Paper Inc — we have five different offices spread across the country — we are in the process of implementing an intranet to give our employees greater access to information

For us, timely access to company news corporate policy human-resource procedures — even simple things like phone books product specifications and pricing information — will all be improved by using the technology of the Internet.

For something under $2 000 the Nataprk router for PC/Windows networks when connected to an ISDN line from the phone company will provide high-speed Internet access to everyone on your Ethernet-based Local Area Network. (URL. www.farallon.com)

We have started the process by installing ISDN lines connecting our offices directly to the Internet. Anyone on staff with the correct software setup, can now browse the Internet. The next step is to build our own corporate Web pages.

Booming market

According to a report by Zona Research (http //www xbg com/Pubs/Inet html) intranet technologies and products are expected to comprise roughly 10 per cent of the $4 billion market for Internet-related technologies during 1995 The report estimates that the overall number of users with Internet potential will jump from approximately 16 million to more than 42 million by 1998

Just-in-time information

Normally we would use printed material such as employee handbooks price lists, media kits etc to disseminate information to employees This printed material is both expensive and time consuming to produce — and is invariably out of date by the time someone looks at it. Uncountable hours are lost just verifying the information. Then there is the issue of circulating it across the country and ensuring it is there when people need it

In today's tough competitive markets, a cost-cutting mentality exists that demands that we constantly do more with less Even in such an environment it doesn't make sense to eliminate internal communications tools. In fact we know that better internal communication will make us competitive in the future Timely access to accurate information has never been more important.

No matter what the size of your company this internal movement of information counts. If your business has 60 or 6 000 — in fact, if it contains more than two people communications is probably an issue

Other approaches

Other technologies have attempted to address these problems. E-mail does some of the job. It is great for one to-one communications, even one to a small group.

As I mentioned in a previous editorial, groupware is another step Products like Lotus Notes Netscape's (Collabra) Share and SoftArc's FirstClass all help but they are, for the most part closed proprietary systems Lotus has realized this and is aggressively including the Net in their new Notes version 4 0 release Netscape acknowledged the need for more depth in the groupware area with their purchase of Collabra.

Net Browsers — the telephone for the 90s?

For many companies, the big advantage of using Net-related technologies right now is the incredible boom in new products and in general their low cost Increasingly, a Net browser is becoming the tool for acquiring information outside the company and many will become comfortable with this way of dealing with the world With Web browsers becoming the "lowest common denominator" in information-access tools managers are coming to the conclusion — "why not use them to access internal data this way as well?"

Enjoy the issue

Douglas Alder
Publisher/Editor

GIS data beef hits responsive cord

Doug Alder's editorial on the cost of GIS data in Canada was right on the money (see "Letter From the Editor," Jan '96) The cost of data from Statistics Canada and provincial agencies, like our Central Surveys and Mapping, is far too high and stifles the growth of a market with a lot of potential

I think his grasp of economics and the market realities in this sector is correct There is an inverse relationship between cost and volume If StatsCan placed its products in the public domain there would be an explosion of activity as companies used that information by folding it into modern high-quality products for mapping, marketing and tourism. This activity would be mostly in the small business sector with its noted potential for innovation job creation and profit production

Bill Holden
City of Saskatoon
Planning and Building Department

Your recent editorial on data maps shows only a small part of the picture For a student or professional in the United States or in many other countries there are vast arrays of data available for free or for a nominal cost on the Internet. In Canada the government charges very high costs for data

For some of us we have to look high and low for sponsors for particular analytical projects That is hard enough However for the small businessperson or student the cost of information is prohibitive This means relative to students in the U S the benefits of the information highway will be much lower

Many academics are now recommending that their students focus their theses on U S subjects just because of research costs

As Canadians we are all losers because of this narrow attitude to cost recovery

Paul M Jacobson
Jacobson Consulting Toronto

I know wave, and I know table, but .

Could help me out with the meaning of "wavetable?"

The term appeared in a recent *TCP* article on MIDI.

Rene Morin
Hull Que

***GB replies** The term wavetable refers to waveforms (digitized audio samples) recorded and either stored on one or more ROM chips or loaded into RAM from disk The term "table" comes from the fact that such cards typically have 128 General MIDI programs arranged in a table of presets*

These tables of wavesamples can be reconfigured to emulate other musical instruments. A SoundBlaster game card for example can be configured in Windows to play back the 128 General MIDI programs and can often be set to emulate other electronic MIDI modules, as well For example, the Roland MT-32 was a popular module with musicians a few years ago It is emulated by the SoundBlaster products and some other PC sound cards.

I recommend ROM-based wavetable systems such as the SoundBlaster AWE32 (available both in a non-expandable "value edition," and a deluxe version that can add optional "SoundFonts," which are basically RAM-loadable waveforms) ROM based wavetable cards are somewhat less flexible, but in my experience, less prone to compatibility problems The Ensoniq card (which I also like) is ROM based, too

Vacation video needs Rx

I am a rank amateur at video production I shoot vacations and special events of a family nature Regrettably a lot of what I shoot is uninteresting and needs editing

I will be purchasing a new computer ASAP — Pentium 120 or 133 16 MB RAM 1 2 GB hard disk 6X CD-ROM sound card and 2 MB video card

What I need now is to find software to use to receive my raw VHS video images, allow me to erase some re-order some other scenes and to add voice or music then spit it back out to VHS video tape.

This may also require additional hardware which I want to order installed in the new machine I have not yet found a source of information product reviews or other users from whom to learn Can you help?

John C Mason via Internet

***GB replies.** Looking for easy video-editing software for your PC or Mac? Check out VideoDirector If you have Web access, they have a Web page at www.islandnet.com (do a Web search for more info) There's a VideoDirector home version (about $100) that includes an infrared controller that controls your camcorder and VCR for low-end editing, as you mentioned.*

If you need pro-quality (semi-pro is probably a more accurate term) stuff, check out the new Miro DC20 hardware/software combo at www.miro.com It runs about US$1 000 and won a Best of Comdex award a couple of months ago.

PS Your hardware choices sound hot Don't scrimp on the graphics card and monitor

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How to pick an ISP take 2

In *TCP*'s Dec 95 issue I read with great interest James MacFarlane's article on choosing an Internet provider I found that he wrote too freely on bandwidth without completely researching the topic

Here's a quick and dirty guide divide the ISP's bandwidth by the number of lines they claim to have If the number of lines they claim to have is less than the speed of your modem (in bits per second) it's probably going to be slow when the system is running near peak capacity

He did not consider:

1) ISP's often user routers that compress the data to a ratio as high as 1 8
2) He assumes everybody online is downloading information, when in fact half of the users at a given time will be accessing local servers whether it is to read news or retrieve e-mail.
3) He also suggests dividing 28 800 into 1,500,000 (1 5 Mbps) which is a T1 That works out to 52 lines for an ISP on a T1 Until bandwidth is available in vast quantities, I feel the users will have to give a little during prime time to accommodate the number of users on the system

Andrew A. Chase
Maritime Internet Services Inc

In search of an $800 solution

I am a student on a budget Recently, I received a used PC. 386DX 20 40 MB hard drive, 1 MB RAM monochrome monitor 2400 modem, and 1 44 floppy I would like to upgrade the graphics on this system I can spend up to $800 What color options can you suggest for a student on a budget?

KES via CompuServe

DT replies For about $400 you can by a decent 14 inch color monitor and basic graphics card, but you could also spend the entire $800 However you have to recognize that your computer as configured will not benefit from an expensive graphics card

With 1 MB of RAM you definitely cannot run Windows nor will you be able to run some of the more recent DOS programs that require larger amounts of extended memory Therefore there's no sense buying an expensive graphics accelerator card which mainly benefits Windows screen redraws or graphics intensive programs like CAD or other drawing programs, because you won't be able to run those kinds of programs anyway And if you are considering a computer upgrade in the future you probably won't be able to re-use the graphics card because it will be an ISA-type card to fit your 386, but new systems use mainly PCI (or less frequently, Vesa local bus) expansion cards A basic VGA color graphics card will be fine, and should cost less than $100

The monitor is another matter Spend more if you are contemplating an upgrade for your computer You can buy a basic 14-inch monitor for about $300 A good 15 inch monitor will cost you about $500-600 but unlike your graphics card a quality monitor will not be obsolete — even when your rich aunt springs for a Pentium the monitor will be usable

If you live in a larger metro area, you might also consider a new end-of-line computer In the Vancouver and Toronto areas (and possibly other metro areas) you can buy a 486DX2-66 with a 14-inch color monitor, 4MB of RAM and a 540 MB hard drive for about $1 000 If you sold your 386 for $100 and added the $800 you have budgeted you'd almost have enough for a much better system.

Apples, oranges and reality testing

While I found your Jan 96 articles on the Pentium pro were pretty fair when comparing the P6 to other iterations of X86 processors, you completely lost any sense of objectivity when you compared the P6 box you were testing to a 7100 Mac C'mon grab a bit of reality guys. Comparing a first generation 601 PPC to a sixth generation X86 has stretched your credibility past the breaking point. To make a fair comparison you got to run the P6 against a 9500 If you don't have one don't even bother mentioning a Mac and P6 in the same paragraph much less in the same article

When a typical PC propeller head sees a Mac model number he or she has absolutely no idea just what kind of machine is being referred to This situation is largely due to shoddy or out right ignorant coverage of anything that isn't Wintel A situation that you are helping to propagate! I would like to see *The Computer Paper* live up to its name and cover the (desktop) computer industry with a bit less bias

Bruce M Anderson via Internet

GF replies The version of that article posted online has already been corrected to reflect your observations It should be noted however that the article that appeared in print was erroneous We actually compared a year old Pentium 100 with 16MB RAM to the PowerMac (the Pentium was — and remains — considerably less expensive and less well-equipped with RAM so the test could be said to have been reasonably fair), not a Pentium Pro with 32MB RAM It is true that the

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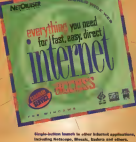

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P100 still might have been reasonably expected to outpace the PowerMac but tell me truthfully did you REALLY expect it to be over 20 times as fast on that particular test? It shocked me and those of us here that had been performing these conversions on a regular basis (primarily on PowerMacs)

Anyway, this test was wrongly inserted into the Pentium Pro article, but although the error was noted before we went to press, the change didn't make it into the printed version. Sorry.

CF adds: WinNT is very fast on a Power PC we had one around for a couple of weeks. It is very hard to give you any specifics however due to the current general lack of available cross platform benchmarks.

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Women executives:

Computer industry offers a world of opportunities

BY JEAN ALLEN IKESON

Worldwide, only 15.5 percent of Internet users are women, according to the third World Wide Web User Survey conducted by the GVU Centre at the Georgia Institute of Technology.

Before your alarm bells start ringing about the need to motivate young women to get into technology and science, read on.

Women are alive and thriving in the computer industry in Canada. Think of names like IBM, Apple, Lotus, Claris, Artisoft and Corel and prepare to be impressed — not just by the women who occupy senior positions in these companies, but with the openness and excitement these women see in the computer industry as a whole.

It would be easy to say that, for women, the computer industry is the right place at the right time. But the women interviewed for this article say the computer industry is the right place for creative and energetic people of *any* demographic makeup.

Echoing this belief is Artisoft's Susan Payne, who say that "It is the variety and quality of people in the industry that makes it strong." Most of the women would agree opportunities are greater at computer companies than in other businesses because the field is growing and changing so rapidly.

As Lorna Rosenstein, Lotus Development Canada's general manager, put it, "computer companies are large enough for opportunity but small enough (for an employee) to be noticed," as compared to older, more mature industries, such as auto manufacturing or the oil patch.

It is this newer environment that has allowed women to prove themselves in upper management positions. The adage that women are rare in boardrooms just does not apply here. Two out of the five senior international vice-presidents for Lotus are women. At Apple Canada Inc., there are also two female vice-presidents, Sandra Piperias for finance and Sonja Gundersen for law and corporate development. Claris also has a female vice-president.

Administrative positions are one thing, but what about top research and development jobs? Corel Corp.'s desktop publishing product development manager, and the technical (engineering) manager for CorelDraw are both women.

The common ingredient is that the computer industry is a skills-based community where leadership, marketing ability and technical know how pay off, and gender is generally ignored. Since the challenges are so great and delivering the goods is given such a high priority, game playing is not an issue.

"The business is always moving so fast that opportunities are always there," according to Victoria Withers, IBM's general manager for British Columbia. Like the other women I spoke to, she stressed that performance is the measuring stick, and performance is based on skills. For her, that means leadership, marketing and people skills. Born in Montreal, with a commerce degree from McGill, she has worked for IBM for 18 years in 11 different positions. She has had four chil

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dren along the way — now ranging in age from two to nine IBM placed her in a challenging better job after each child was born.

However juggling home and after-hours "networking" and community service has made leadership challenging for Withers.

Another executive who puts in more than a nine-to five work day is Lotus Development's Rosenstein. She also grew up in Montreal began her education there as a teacher and went on to earn an MBA from Columbia while working for Lotus.

"Individuals as well as corporations have a responsibility to be involved with the community," Rosenstein mentions.

She works, through Lotus on philanthropic events across Canada. After work hours, she is active in Gilda's Club named after comedian Gilda Radner where Rosenstein is helping to establish a cancer-resource centre in Toronto. As Lotus general manager for development she oversees all aspects of the company's business sales marketing human resources and finance as well as integration between IBM and Lotus.

She echoes the message that promotion is ►

Nora H[illegible]ft

Susan Payne

Lorna K[illegible]

Victoria Withers

Women in technology: The flip side

If you read though the Women in Technology section and related links on the World Wide Web (try witi.com), you get a totally different story than that presented by the women executives who work for IBM Apple Lotus Claris, Artisoft and Corel. These women said discrimination is minimal and opportunity is abundant.

Perhaps if I had interviewed women in academia, the story would have been less positive. But that may be more a function of academic life than computer science.

There may be few women in faculties of computer science, but try looking at English departments where the majority of tenured professors over the last 40 years have been male while the majority of grad students were female.

One problem with the Women in Technology section is that some of the papers were written up to five or six years ago, with the corresponding research sources being even older. While that may be OK for some disciplines, the computer industry is moving and maturing too quickly to rely on older research.

For example, a common complaint was that educational software is male oriented. The assumption is that this orientation, in turn, discourages women from being interested in and entering the computer field. However, the revolution in "edutainment" that has occurred over the last three years has addressed this issue. Newer math programs are no longer centered around little boys shooting rockets out of the sky with math solutions.

There are also loads of statistics that show how few women there are on the Net. If you look at telephone listings you might come to the same conclusion about the phone system.

It may have been true that women were once intimidated by older DOS-based programs that had a high learning curve and internet providers that had ASCII-type interfaces where long lists of incomprehensible commands had to be memorized in order to navigate the service. Now that those have been, for the most part, replaced by user-friendly programs, manuals and interfaces, one does not need to be a guru to use and "play" with computers and the Internet. Perhaps the new generation will not feel intimidated and the statistics will reflect a surge in women in computer science and electrical engineering.

However, as the women executives interviewed showed, degrees in these areas are not the only route to success in the computer industry. It is so new and moving so quickly that "self-learning" and learning on the job may be as important to success as formal education.

The epitome of the flip side is an Internet conference group called "systers" that caters to professional women in computer science (systers-request@pa.dec.com: put "addsysters" in the subject field to join). The group provides a women-only forum discussing the ups and downs of the field and offers a "medium for networking and mentoring." It is restricted to women and carries founder Anita Borg's philosophy that women talk and deal differently with other women than they do with men.

Jean Allen-Ikeson

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[illegible] professionalism and [illegible] gender. "The industry is so diverse with so many areas for people to move and grow in. Young people have more chance to make it big in this entrepreneurial environment where everything is changing so rapidly."

The commitment at Lotus is to excellence. Age and gender are irrelevant. At Lotus, Rosenstein explains, "people are people." However, she feels women in management positions have a responsibility to be more than role models. They "must stand up and be counted," and if something comes up in a meeting that is wrong, they must do something about it. The idea is to ensure that discrimination does not happen.

In the same vein, Rosenstein believes young women must be responsible for their own development by getting the best possible education and fulfilling their ambitions.

"When it does not matter what an article such as this one is about — when it can be about successful people rather than successful men or women — then women will have arrived, but they are not quite there yet, even though there are many, many women in management positions in computer companies," she says.

For Rosenstein, the computer industry is full of excitement and creativity. For example, Lotus Notes focuses on enabling people to work together anytime, any place, on any platform. This is "one way the industry is changing the definition of competition," she says. Another is with the Internet. It is opening new ways of doing business.

"The use of technology in business and in the home is being revolutionized. Because of this, the pace in computer companies has not let up," Rosenstein argues.

That the Internet is changing the computer industry and providing an area of enormous opportunity is a common refrain from these managers. Cathy Wright, technology manager for CorelDraw in Ottawa, sees the Internet as a major new direction for software developers. "More and more applications will have Internet hook-ins and incorporate multimedia," she says. Since "everything is being computerized," she predicts the growth cycle will continue.

Since this is a huge growth industry, and it is the growth aspect that makes it easier for women to get in . . . there are no set rules about who goes where.

— Nora Hunt-Haft

Wright would like to encourage as many people as possible to "get into computers," because the demand for good people is great in so many areas. Since there are not enough trained people to go around, companies are fighting for the best graduates. From her standpoint, students should get degrees in computer science or computer engineering/electrical engineering. The former is less male dominated, but she stresses that, at a corporate level, discrimination is virtually unknown. "I would like to see more women in the field because it is such an exciting and dynamic place to be," Wright maintains.

Corel has also been interviewing and hiring recent immigrants from places such as Eastern Europe and China. That you can go from humble beginnings to a position at the cutting edge of development is echoed by Corel's Cindy Howard, Ventura product-development manager. While Wright has a computer science education, Howard left the University of Georgia with a fine arts degree. Experience in typesetting put her on the word processing bandwagon in the '80s, which led to a place on Xerox's Ventura Publisher team. When Corel bought the code after Xerox abandoned the product, she was one of eight people Corel imported to establish its own Ventura team and was the only non-engineer.

"I have a high powered and exciting job making team decisions over what direction the look and feel of Corel Ventura will take," says Howard. For example, documentation has to be accurate and look good, decisions must be made over what bitmaps to use for buttons and there is the daily round of providing feedback to beta testers and working with user groups. Howard stresses that the opportunities are endless for women in Corel. They look for applicants that demonstrate flexibility and technical ability. Technical writers are always in demand.

Nora Hunt-Haft, managing director for Claris Canada, is another female manager who found that the information technology industry's doors swung wide open for her. She started as an employee in a computer store and worked her way into management. Then she moved to Claris as an account manager for western Canada for five years before tak-

Continued on page 17

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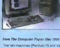

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New pricing for Lotus Notes client and server software

NB — Lotus Development Canada Ltd of Toronto, announced new pricing for existing Notes client and server software as well as a new client called Notes Mail

A single-user license for Notes Desktop the run-time version of the workgroup software sells for $100 to $224. The new Notes Mail client will have a suggested volume price of $80 per single-user license. It is expected to ship at the same time as Notes Release 4 The full Notes desktop client is $356 per user license

Notes server pricing also changes, Lotus Canada said, to $655 in volume for single-processor systems and $3,035 in volume for multiple-processor systems These prices are to take effect when Notes Release 4 ships.

Contact: Marsha Canner Lotus Development Canada 416-364-8000)

Digital product boom predicted

NB — New digital products will result in continued growth in the consumer electronics industry, predicted Gary Shapiro president of the Consumer Electronics Manufacturers Association speaking at the opening session of the Winter Consumer Electronics Show in Las Vegas,

He said the trend will result in accelerated sales for 1996, which will grow an estimated eight percent.

The consumer electronics industry grew 10 percent in 1995 improving on the eight percent growth forecast in July 1995, according to the CEMA. The boom in home-office and home-theatre products was a major contributor to the industry's record sales of $62 billion.

"We expect the introduction of the Digital Video Disk (DVD) and the expansion of Digital Satellite Systems (DSS) combined with the continuing home-office phenomenon, to accelerate sales to eight percent growth in 1996" Shapiro said.

According to the CEMA in 1995 home office products accounted for sales of $22 billion — up 24 percent from 1994 Some sources estimate that as many as 54 percent of American households set aside space for a home office In 1996 sales in the home-office category are expected to reach $25 billion.

One area that is contributing to the growth is home theatre, said Shapiro "If you find there is less traffic on the road in 1996, you can probably thank the home-theatre manufacturers for solving part of that problem"

Sales of home-theatre components reportedly jumped 45 percent in 1995, to $755 million. On the video side, home-theatre sales rose five percent in 1995 and are projected to increase 13 percent in the new year Dollar sales of video products were reportedly up three percent in 1995 and are expected to increase by four percent in 1996

Contact: Information on the Consumer Electronics Shows and the consumer electronics industry is available via EIA/CEMA's World Wide Web site at http://www.eia.org/cema

Intel 150 and 166 MHz mainstream processors available

NB — Intel Corporation announced immediate availability of the highest performing new products in its mainstream Pentium processor line, the 150 and 166 MHz (megahertz) Pentium processors

These are expected to push the 133MHz Pentium down to the mid level PCs and the 100 to 120MHz to the entry level machines by the middle of the year.

"With the introduction of the 150 and 166 MHz Pentium processors, users who want to experience the full capabilities of Windows 95 and multimedia-rich software will have the best Pentium processor performance available today at their fingertips" said G Carl Everett, senior vice president of Intel's Desktop Products Group

"With ease-of use increasingly built into hardware and software we expect PCs to make further inroads as a consumer product."

Everett also said that while the recently introduced Pentium Pro processor will be offered in workstations, advanced desktops and servers fast Pentium processor-based systems will remain the choice for mainstream business and home computing where Windows 95 and Windows 3,1 prevail.

He added that the immediate high-volume availability of the 150 and 166 MHz Pentium processors will enable systems based on the 133 MHz Pentium processor to move to the high volume mainstream, and 100 and 120 MHz Pentium processor-based PCs to occupy entry level for desktop systems by the middle of the year

Morry Marshall, computer research director for Instat Research said 'This is just another in a long line of Intel pushing the technological curve It keeps the industry moving, and has the added effect of keeping competitors out of the microprocessor industry As Intel keeps pushing, you can expect the leading-edge Pentium to be around 200 MHz by the end of the year, with mainstream products at 166 MHz."

In 1,000-unit quantities, the 150 MHz Pentium processor is priced at US $547, while the 166 MHz Pentium processor is priced at US $749 Over a dozen PC manufacturers have followed Intel's announcements with news that they are incorporating the new chip into their computers

Contact: Joanne Hasegawa, Intel 408 765 7526

STD begins shipping Canadian built PowerPC systems

NB — STD Systems Inc has begun shipping its Power2 workstations and servers, based on PowerPC chips, to Canadian universities, governments, and smaller corporations

The Power2 systems additions to STD's CompuPartner product line, use PowerPC 603 603e, and 604 RISC processors on Motorola Corp. Atlas motherboards

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The systems ship with Microsoft Corp.'s Windows NT operating system.

Abe Ellorin, an STD account manager said his company sells most of its products in Canada and does all of its development here. Most of the motherboards and other components are imported, he said, though STD assembles the systems in three Canadian manufacturing plants.

Higher education is a major market for STD, Ellorin said, but the company also sells to the federal government and is pursuing small corporate accounts. Seven-year-old STD claims to have a 19 percent share of the educational PC market in Canada.

Company officials said the PowerPC technology is ideally suited to research and high-end applications where customers need powerful graphical processors. STD said it hopes for "a few million dollars" in sales of the systems in 1996 growing in future years as more PowerPC based software comes to market.

The PowerPC processors used in newer Macs some IBM RISC System/6000 machines and computers from several other vendors, are the result of a joint development effort by Apple IBM and Motorola.

Prices for the CompuPartner Power2 systems start at $4 000 with prices for the top-of-the-line systems beginning at $8 000 Ellorin said.

Contact: STD Systems has a site on the World Wide Web at http://www.std.ca

Toshiba introduces Digital Video Disk

NB — Toshiba demonstrated its new Digital Video Disk (DVD) technology at the Winter Consumer Electronics Show, in mid-January.

Expected to create an even greater consumer interest in home theatre and computer technology DVD allows CD-ROM sized disks to carry more than two hours of video and audio content.

Toshiba demonstrated two DVD-player models the SD 3006 and the SD 1006 both designed for television viewing. The players are expected to ship late this year.

DVD drives for computers are still in development.

The new disks can hold as much as 133 minutes of video which is sufficient for 94 percent of all feature-length films. The company says the technology exceeds laserdisk and professional studio masters with a resolution of 720 pixels per horizontal line.

On the audio side DVD offers six-channel discrete Dolby Digital Surround Sound Dolby Pro Logic and high fidelity stereo.

Both models offer full range support of DVD technology. The 3006 is targeted at high end videophiles and allows for optimal image quality and picture performance Toshiba claims. The SD-3006 sells for US $699 and the SD-1006 for US $599.

Analysts expect a DVD drive for the desktop computer sometime in 1997 and predict it will be the end of the CD ROM market. The multimedia revolution around CD ROM based computers has been bound by a limitation of storage.

Once hailed as the answer to computer storage with its more than 600 MB capacity CD-ROM technology brought bright colorful images, games and educational material to the computer desktop.

When CD-ROM developers added video to their multimedia presentations they found 600+ MB of space limited their productivity. To play a full length movie on a CD-ROM player a user has to change disks in the middle of a film. DVD storage capacity is 4.7 GB roughly seven times the capacity of a CD ROM.

Among the numerous advantages of DVD is a control function which allows parents to select which movies can be played, based on ratings.

1996 a slack year for World Wide Web growth says IDC

NB — Although the World Wide Web will undergo a temporary slowdown in 1996 International Data Corp is "bullish" on the Internet's prospects for the next five to 10 years predicting growth in numbers of online users to more than 200 million and in electronic commerce revenues to more than $200 billion by the year 2000 said Frank Gens senior vice president of research in an interview.

Gens compared the Web's outlook for 1996 to the "lag time" that set in for the PC industry around 1982 when the supporting infrastructure for PCs was weak and some early users grew disappointed.

"In the course of this year about 35 of the Fortune 500 companies will abandon their current commercial Web sites, resulting in the emergence ghost sites," Gens added.

By the close of 1996 somewhere between 150 and 200 of the Fortune 500 firms can be expected to open new Web sites he added.

"First wave," back-office functions such as airline-reservation systems and "second wave" tasks in the area of office automation will continue to be carried out on the Internet. Many of the newer sites will be aimed at a "third wave" of Internet applications — calling for online communications with consumers, said Gens.

Accordingly also over the coming year, PC makers will be making individual consumers a major target. "Internet appliances" will hit the market for as little as US $100 to US $300 and full-fledged multimedia PCs will be available for under US $1 000 not including monitor, he reported.

"The next five to 10 years will also be an era of a turnover in leaders," Gens asserted. Drawing another parallel with the PC industry the IDC exec pointed out that among today's top 20 information technology manufacturers only 10 existed 10 or 15 years ago.

Gens foresees a rough road for online service providers.

"Some [online service providers] will do well but others will culturally choke on the Web. The question will turn on whether these companies can change their business models from the old proprietary 'Club Med' model. Users are saying 'We don't want this very safe walled world. We don't want to be confined.'"

Current industry leaders like IBM, Apple, and Microsoft will also be faced with tough choices, according to Gens. IBM will need to decide whether to continue to target consumers via Prodigy.

Apple will have to determine whether to remain in the hardware business or to concentrate on its long-time strength of "human

Continued on page 17

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ing her current job two years ago

"Since this is a huge growth industry, and it is the growth aspect that makes it easier for women to get in there are no set rules about who goes where There is an acceptance in the industry that there is a growth path for women," she maintains.

Currently, Huni-Haft sees more jobs in software and product development and fewer in sales. Sales jobs have declined because the customers no longer need much convincing to computerize They are better educated about products have higher expectations and have reversed the traditional sales process to the point of telling companies what to develop and where to add features

Payne, who is general manager of local area network maker Artisoft Canada, has an international perspective on the computer industry Besides holding several positions in Canada she was asked to start a European office and worked for a Japanese company Like Withers and Wright she juggles a young family and her career and gives perfect marks for support and encouragement to her husband His job allowed him to follow her during a two-year position in the Netherlands

Payne says the opportunities for Dutch women are terrific The government subsidizes companies while women are on maternity leave so they do not lose their benefits and seniority However, she is puzzled that, unlike Canadian mothers most women in the Netherlands leave the work force after the birth of their first child

For Payne it is possible to maintain a balance between home and job, even though the latter is demanding On the other end a business trip to Japan caused considerable confusion. Male colleagues there thought it was not appropriate for men to entertain women, so less senior female managers were enlisted

Comparing the industry today to when she was hired, Payne said, "It's harder now because so much contracting out is being done. At one time you only needed technical competence but now you need business skills to add to it Companies need more than just a good product, they also must know how to market and sell it."

The barriers to women established by the Old Boys Club are not evident in the computer industry And according to the female executives I spoke with, once you are in and make a name for yourself the jobs come looking for you The perspective they all share is that businesses involved in the computer revolution are dynamic workplaces where hard work and enthusiasm pay rewards. ❑

NewsBytes

Continued from page 15

interface" software technology either merging or aligning itself with another original equipment manufacturer

Web Order Taker Software Enables Electronic Commerce On The Net

Edmonton based Abacus Accounting Systems Inc recently announced a new software product called Web Order Taker, which is aimed at enabling businesses to sell goods and services on the Internet. "The Internet has become a necessity for doing business according to Dwayne Kushniruk, the President and CEO of Abacus Despite the widespread popularity of using a Web site as a marketing and public relations tool relatively few have been able to go the next step and link business databases with World Wide Web pages: "until now creating a link between the business Home Page and its inventory customer and accounting databases has been extremely difficult and expensive. Web Order Taker combined with R:WEB our HTML native database for the internet provides a simple, fast and inexpensive solution to this problem," according to Kushniruk. Using the Web Order Taker, businesses can create a Web Home Page to both process orders and promote products. The package comes with a variety of templates that make it easy for users to create customised home pages.

For more information contact Abacus, (800) 992 0616 or http://www.abacus-group.com

Animation Festival Features Creators Of Toy Story Digital Magic

The Ontario Science Centre Festival of Animation, running in Toronto from February 10 to 11 will feature special screenings of the recent Disney hit film Toy Story, as well as personal presentations by some of the artists and technologists who created the movie and computer graphics software and hardware manufacturers. Talented Canadians such as Glenn McQueen a grad of Sheridan College's computer animation program (and currently an animator at Pixar) worked on Toy Story, and is directing new films at Pixar. Caleb Howard a U of Waterloo grad, worked on Apollo 13 True Lies and Interview With The Vampire and will discuss his adventures creating special effects for feature films and television

Outstanding examples of computer animation will screen continuously and state of the art computer graphics systems will be demonstrated hourly Students and staff from Sheridan College will be on hand to demonstrate animation in an Information Highway Exhibit.

Access to the festival is included in general admission to the Ontario Science Centre. For more information contact (416) 696 3127 ❑

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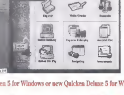

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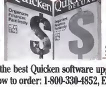

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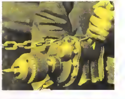
Build your own Web site

A look at the new tools for electronic publishers

BY GRAEME BENNETT



Products Reviewed

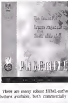
- FrontPage (for Windows 3 1/95/NT from Vermeer US$695)
- PageMill (for Macintosh from Adobe US$99)
- HTMLed (for Windows by Internet Software Technologies $129 95 educational pricing available)
- Hot Dog Pro (for Windows by Sausage Software US$79.95)
- Internet Assistant for Word 95 (for Windows 95 from Microsoft Freeware)
- Netscape Navigator 2.0 (for Windows/Mac/Unix from Netscape Free for educational and academic use; US$48 95 for commercial use)
- Home Space Builder (for Windows from ParaGraph pricing unavailable at press time)
- Fountain (for Windows from Caligari; free 90-day evaluation)

Many people are aware of the World Wide Web, and most of them have at least a vague idea of how easy it is to create their own Web pages (if you're not refer to our series of HTML articles at tcp ca/html) Actually putting those pages "up on the Internet," however, is something that relatively few understand, and fewer still have done. This article will discuss both the creation and installation of Web pages, and hopefully help you make the leap into electronic publishing on the World Wide Web

Phase 1: Page creation

Adobe PageMill

There is no shortage of tools for creating your own Web pages especially since you don't really need any special tools. Any word processor or text editor capable of creating plain text files can serve as a quick 'n'-dirty HTML-authoring utility Of course, such a bare-bones approach doesn't provide much in the way of luxury — you're on your own as far as inserting special HTML codes and tags for graphics page links and so on. However, the sheer speed of plain text editors such as Notepad (Windows) or SimpleText (Macintosh) makes these the choice of some do-it-yourselfers (including yours truly at least for simple page changes and additions)



There are many robust HTML-authoring solutions available, both commercially and freely Our favorite overall is Adobe's PageMill (currently available for Macintosh only) which isn't perfect but is quite fast and very easy to learn

PageMill doesn't support many of the "extended tags" that recent releases of Netscape and Microsoft Internet Explorer use to add pizazz to Web pages, such as tables frames, embedded font and movie or sound information However for basic text and graphics, it is one of the fastest and most trouble-free editors available

One potential problem we noticed. If you download a page to work on it, but don't download (or otherwise have access to) all the graphics that go with it PageMill resizes all the graphics to tiny 50-pixel-square boxes Needless to say we hope Adobe addresses this oversight in a future release

We'd also like to see a future release of PageMill support more HTML 3.0 and Netscape 2.0 tags to ease the creation of tables and frame-based pages More info on PageMill is available at www adobe com

FrontPage

FrontPage a US$695 package for Windows 3.x/95/NT from Vermeer is much more than a Web-page editor The package, which was named a Hot Pick at last fall's Seybold Publishing conference in San Francisco provides page-creation site-administration, and Web-server software — literally everything you need to create and maintain your own Web site. Overall we were very impressed with the package.

It provides a number of complex services to add to a Web site threaded discussion groups advanced search capabilities (via WAIS) forms creation, and automatic table of contents generation We tested the package and found it easy to set up and use

The page editor portion of the package is comparable (limitations and all) to Adobe PageMill. You have to be careful when loading a page into Vermeer's editor as its HTML-checking routines will foul up tables that have previously been (manually) designed with Frames and Tables There is an easy workaround, described in the documentation but it does lessen our enthusiasm for the editor Vermeer says the next version of its editor, due in the spring, will support HTML 3 0 functions

The program's greatest strength is its "Bots" a series of automated functions that make the creation of corporate or personal Web sites almost child's play You merely tell the program what kind of Web site you want to create (corporate product-oriented, per

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Sound blaster 32bit	$369
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8 Mb RAM 72pin 70 ns	$299

sonal, discussion group, etc.), pick a "style" — ranging from traditional to too-cool — answer a few questions about the name of your company and so on, and bingo! The program spits out a series of linked pages with all of the goodies that are standard fare on most Web sites: a home page, "What's New" section, button bars along the bottom of each page, "your logo here" graphic placeholders and so on — all nicely designed and formatted.

Once you've got your Web pages designed and checked (FrontPage includes a built-in spelling checker but please give your pages a careful examination anyway), you are ready to serve them to the world. It's surprisingly easy with FrontPage, which includes "personal server" software for your Windows PC from NCSA, based on HTTPD, a popular public-domain Web-server standard. The package includes the necessary "CGI-bin" code to enable searches and forms handling (etc.), and, if your server needs exceed the capabilities of this admittedly low-end PC-based server, Vermeer makes CGI-bin code for FrontPage functions freely available for Unix machines running Apache, NCSA, or WebSite servers. In other words, if your Web site becomes so popular that you outgrow your "personal Web server," you can move your pages to a Unix-based host without losing functionality.

In all, this is the most advanced Web site utility we've seen, and it works very well.

A fully functional 30-day evaluation version of the software (9.5MB in all!) is available at Vermeer's Web site: www.vermeer.com. Highly recommended.

Hot Dog and Hot Dog Pro
US$39.95 and US$79.95 respectively from Sausage Software (www.sausage.com)

If you spend as much time on the Internet looking for collections of the latest and greatest Internet tools as we did during our research for this article, you are bound to run across Forrest J. Stroud's Consummate Winsock Collection. This site, which Windows-based Internet users will find to be an invaluable resource, contains links to virtually every significant Internet utility available for the PC.

However, the reviews and ratings of these programs are a matter of opinion. Case in point: Hot Dog Pro, from Sausage Software, is rated by Stroud as "the best HTML-authoring tool available on any platform." While it certainly has the most features of any program we've seen (including support for nearly all HTML 3.0, Netscape 2.0, and Microsoft Internet Explorer extended tags), it is not particularly easy to learn and, at least in our tests, is quite clumsy in actual use. Nevertheless, it's worth checking out a free 30-day eval copy, available from the www.sausage.com site.

Microsoft Internet Assistant 2.0

This free program requires Word for Windows 95 (an earlier and less-capable version that works with Word 6.0a under Windows 3.1 is also available) and turns Word into a combination Web browser and HTML editor. As a Web browser, we'd give this one a miss (it's quite slow and rather limited compared to, say, Netscape), but as an HTML page editor, it's quite successful and easy to use. We don't buy Stroud's complaint that it is unusable on anything less than a Pentium, though. We tested Internet Assistant 2.0 on a 486/50 with 16MB of RAM and found its performance quite acceptable.

Internet Assistant is uniquely integrated into the Windows 95 environment. When you install it, a new option becomes available when you right-click on an HTML file: in addition to the usual "open" command, you'll find "edit." When this command is invoked, the file opens right up in Word, which parses the file and displays it in full WYSIWYG mode. It interprets the text styles, links, GIFs and JPEGs, plus adds support for a number of enhancements specific to Microsoft Internet Explorer: fonts, colors, and several other extended tags. Naturally, you have access to the plentiful array of editing and spelling-checker tools in Word, as well.

Unlike the first version of Internet Assistant, the 2.0 release can also switch to non-WYSIWYG mode, to view and edit "raw" HTML.

One other interesting feature of Internet Assistant is its ability to download a page directly off the Internet and open it for editing.

In all, Internet Assistant is a classic example of the way Microsoft seems to tackle many of its markets: the company comes out with a basic version early and then works to upgrade it until the product is right up there with best-of-breed. And then, much to the chagrin of its competitors, we're sure, Microsoft gives it away for free, as it has done with Internet Explorer, Virtual Explorer, Internet Assistant, the special offer on MS Money, and other promotions.

Internet Assistant is a must-see if you are a Word for Windows 95 user interested in a WYSIWYG Web-page authoring environment.

➤

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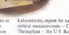

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HTMLed Pro
This Windows-based HTML editor takes a considerably different tack than the above-mentioned titles Internet Software Technologies has focused on the needs of professional page designers and has come up with a product that trades off some ease of use for powerful capabilities such as the ability to handle forms, tables and Netscape and HTML 3 0 tags Check out the product at the company's Web site www ist ca

Phase 2: Other media on the Net

While we're at it, let's not forget that the Internet can now support a wide variety of other media in addition to the text and graphics "traditionally" viewed via a Web browser. Helper applications or "plug-ins" can extend the capabilities of Web browsers to support animation and video, audio speech MIDI, 3D graphics (see VRML, below), or just about anything else Naturally, some of these types of media are more successful than others, due to the often limited bandwidth of the Net.

Here are the big players, what they do, and the best way to create content for each.

Animation
For Netscape, the best animation/interactive media solution is ShockWave which uses Macromedia Director a $1495 (the street price is about US$800) authoring tool for Windows or Mac Support for AVI files is built into Microsoft Internet Explorer 2 0 Netscape and other browsers require a helper app to play AVI or QuickTime files, although Apple has announced its intention to provide a QuickTime plug-in for Netscape 2.x

Although the limited bandwidth of a modem-connected Internet user makes full frame video impractical small "postage stamp" videos can be delivered using today's technology The two leading systems are Xing Streamworks and VDOLive Both are available for Windows the former a helper app suffers from a clumsy interface we'd rate VDOLive (available as a standalone help app or a Netscape plug-in) as more promising overall

A conferencing system called CUSeeMe, developed at Cornell University provides much slower frame-rates and poorer fidelity audio than either of these products but nevertheless has garnered a substantial following, partially due to the fact that it is available for both Windows and Macintosh computers, but primarily because it allows users with an AV Mac or video-capture board on their computer (such as Connectix's US$99 QuickCam for Windows and Mac) to broadcast audio and video over the Net.

Sound
RealAudio, bundled with Microsoft Internet Explorer and freely available as a plug-in for Netscape 2 0 and as a helper app for other browsers running on Windows and Mac based systems, is the most widely supported "streaming" audio product but DSP Group's TrueSpeech is arguably a better technology RealAudio requires a server for streaming playback (i.e. no waiting for the file to download), while TrueSpeech does not. Although Progressive Systems makes the encoder and player software freely available for RealAudio it charges a hefty fee (several hundred dollars) for the server software

We prefer the fidelity of TrueSpeech to that of RealAudio 1 0 although RealAudio 2 0 released in December levels the field somewhat

One has to wonder how long these "pirate TV/radio/telephony" developments will be allowed before the government and/or big business (CRTC copyright organizations phone companies etc) get into the act and inflict some killing legislation upon the whole scheme Whatever, for now, the Internet is the cheapest way to make a long distance phone call, and is just the thing for would-be pirate TV or DIY radio auteurs.

VRML authoring tools
VRML or virtual reality markup language for those who aren't familiar with the term is a relatively new development that allows the creation of "virtual environments" on the World Wide Web where users can explore models in three-dimensions There are numerous reasons why you might want to do this not the least of which is the fact that it's a good way of encouraging potential customers to come in and browse around Rather like the "just hold this puppy" tactics of traditional retailers (also known as the "puppy dog close"), it's a great way to involve — OK, manipulate — the user.

Beyond that, there is obvious scientific, educational and entertainment potential in the world of VRML

There are numerous VRML-authoring tools available Caligari Fountain is one of the better known and is freely available from the

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company's Web site at www.caligari.com. The free (unsupported) version of Home Space Builder from ParaGraph (www.paragraph.com) can also create VRML files. A more-capable commercial version of HSB is also available for about US$50 and is, in our opinion, the easiest to use world-building and VRML-authoring tool available.

Commercial tools capable of generating VRML output include Visual Software's Visual Reality 2.0 (we had difficulty reading VR2.0's files with our favorite VRML viewers, however), 3D Eye's TriSpectives (which does not, as far as we can tell, support texture-mapped VRML output), and Virtus VR (not yet tested).

Beyond these media types, the capabilities of the Java language (support is built into Netscape 2.0, and Java is supported by most of the industry heavies, including Microsoft and IBM) will provide Web users — or at least programmers who can deal with the C++-like idiosyncracies of the Java language — with the ability to make a Web page perform almost any kind of function.

Phase 3: Onto the Net

Once you've made your Web pages, VRML files, or whatever content you have created, you have to put it up on the Internet for others to access... or do you? Many people don't realize that HTML files can also be accessed from a hard disk, CD-ROM, or over a local area network. More than a few people have realized that the plentiful array of authoring tools for Web pages can also be used to create multimedia presentations and electronic documents for convenient cross-platform distribution.

But, assuming that you want to make your Web pages available to users around the world, here's how to do it.

You'll need to find out how much your Internet Service Provider (ISP) charges for hard-disk space on their server. Some ISP's provide a megabyte or so of disk space as part of your account; most charge extra for Web pages intended for business use. Assuming that the price is acceptable, all you need is your account name and password to gain access to your allocated portion of the ISP's hard disk(s); you can then upload your Web pages, graphics and whatnot to the site.

To upload the files, most people use an FTP (file transfer protocol) program. On the Mac, we use a program called Fetch; under Windows, we like WS_FTP (there are many others available, too). OS/2 Warp comes with a good FTP program; they all work similarly. Because of Windows 3.1's eight-dot-three filename limitations, we recommend a 32-bit operating system with long filename capabilities; a good 32-bit FTP program can handle long filenames without any manual fiddling on your part. You see your files on one side and the remote directory (i.e., your ISP's site) on the other. You can "get" or "put" files with ease — as long as you have the password to the site. This way other people can't delete or change the files at your site without your permission.

Once posted to the site, users around the world can access your pages simply by specifying their URL (uniform resource locator) address. If you don't like your site address looking like a subdirectory on your Internet provider's drive (e.g., http://www.yourprovidername.com/yourdirectory/yourhomepage.html), you can pay to register your own domain name with an organization called InterNIC. Prices vary; ask your ISP if they can do the namesearch and handle the registration for you.

For example, we've registered *The Computer Paper's* Web site URL as tcp.ca (we like short addresses), but we've also set our site up to recognize the name "www.tcp.ca" as many people expect the "www" prefix. Naturally, once we've registered the URL, no one else can have a site with the same name.

Note also that recent versions of Netscape, Internet Explorer and some other Web browsers don't need the ungainly and hard to say "http://" code that is commonly quoted as the first part of a Web address.

Conclusion: Now that you're a global presence

We recommend that you focus on creating an Internet presence that emphasizes content over hype. People don't want billboards on the information highway; they come for the info. Update your site frequently; it's What's New that will keep Web surfers coming back again and again.

If your skill-set doesn't include expertise in design or grammar, consider having a professional help you put together a Web site that works. We think that having a presence on the World Wide Web will soon be as important as having a fax number or a business card — perhaps more so. Fortunately, at least at the time of this writing, the free HTML and VRML tools you need to get started are as good, or in many cases, better than the commercial ones.

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Publish or perish

MS Publisher 3.0 eases the burden for design neophytes

BY GRAEME BENNETT

In the publishing business the advent of electronic-document creation or "desktop" publishing, as it is known has been the most significant advance since Gutenberg was credited with the invention of the printing press.

Yet desktop publishing software has, for the decade or so it has existed often demanded so much of its users that the process of graphics-intensive document creation has primarily remained in the domain of art-production departments and graphic-design houses and out of the hands of average computer users

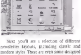
Although many general business and small office workers have been charged with the task of creating a company newsletter promotional document, letterhead or other design intensive documents, all too often the job is thrust upon those more familiar with a word processor and the results well even the best word processors are not ideally suited to the creation of the sort of look that defines the average magazine or professional grade newsletter

Enter Microsoft's new Publisher 3.0 for Windows 95 Taking the concept of Help Wizards to the extreme the program provides expert help throughout the process of designing laying out illustrating and printing a wide array of common document types

For example let's lay out a company newsletter from start to finish in under two hours Here's how

Two-hour newsletter

The first screen you'll see presents you with a selection of document types the PageWizard can help you create. Choose Newsletter

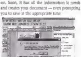


Next you'll see a selection of different newsletter layouts, including classic and modern styles There are even some designed to be printed on pre-printed, color-enhanced paper stock, for those extra special jobs!

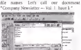
For this job let's choose Modern

The PageWizard steps you through the choices available for this design including the title text and the number of columns you want on the page Because we are going to print on letter size paper let's choose three columns

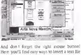
As the PageWizard continues to walk you through the document-creation process it asks you pertinent questions, such as how many pages you want your newsletter to be whether you will be printing double-sided pages, and so on. Soon, it has all the information it needs and creates your document — even prompting you to save at the appropriate time



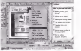
Naturally because Publisher 3.0 is designed for Windows 95 you can use long file names Let's call our document "Company Newsletter — Vol 1 Issue 1"



Run out of ideas? Consult the Design Gallery tool which gives you a large selection of classic designs arranged in a number of "need-em now" categories Headlines Ornaments Pull quotes Sidebars, Tables of Contents and Titles



And don't forget the right mouse button! Here you'll find easy ways to insert a text file from your favorite word processor and a graphic image and zoom in or out for ideal viewing of your newsletter's progress



Continued on page 24

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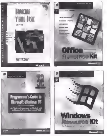

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Aptiva M61 (shown): 120MHz Pentium® processor, 8MB RAM, 1.6GB HDD
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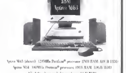

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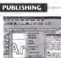
You can type text directly into Publisher or if you prefer click on one of the text blocks provided by PageWizard, click the right mouse button and choose Insert Text File Locate the word-processor file of your choice (Publisher supports numerous formats including Microsoft Word Works and WordPerfect to name just a few) and it drops right onto the page Repeat for other stories you want in your newsletter

If you need to insert a table of text information and/or numerical data Publisher has a built-in table-making tool too Of course, you can import charts or other data from Excel or another program if you'd rather. Then in case you're not happy with any of the suggested graphics provided by PageWizard you can simply right click on one, and either load a piece of clip art from the many provided with Publisher or load a scanned photo or other graphic image of your choice We're nearly done!

After a little polishing (be sure to check out the Help Wizard topic entitled "Tips for finishing your newsletters") it's time to print.



Whoops! Not so fast — we'd better check the spelling first

Publisher can check the spelling in text and table frames and provide you with suggested spellings An option that allows the Check Spelling function to ignore words in UPPERCASE might come in handy for those acrimonious acronyms that are so prevalent in the world of high tech business these days.

At last, the pictures are in place, the text is corrected Most other DTP programs leave you on your own at this point, to publish or perish

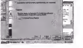
The words "Just print" have always hung like the sword of Damocles over the heads of would-be publishers But thanks to Publisher's help system — and the valuable information on choosing the right paper printing at a commercial printer, binding tips and other info found in the book *The Publisher Companion* included with Publisher 3 0, — you can print a proof on your desktop system and then use Publisher's "Outside Print Setup" and "Print to Outside Printer" commands to output your files in black and white grayscale spot colors (including support for printers with resolutions greater than 1200 dots per inch) or full color proofs on a color printer

An "Options" button in the spot-color dialog makes it easy to choose the spot colors you want, set black to overprint, or even set black text to overprint only at sizes under 35 points, or any other point size you wish Try that on any other publishing program

In addition to the usual printer support common to Windows 95 programs, Publisher provides a special Imagesetter printer driver that can print your document to a file that is ready to pop on to a disk and take to your local graphics service bureau for high-quality output.

Several options are provided, including "PostScript (optimize for speed)" and EPS output appropriate for use in other Windows programs or for placing into popular Macintosh applications

The driver includes options professionals have come to demand from pro-level DTP software packages Publisher 3 0 includes options for automatic "1-up," "2-up" and "4-up" layouts variable screen frequency (this allows you to reduce the "banding" effect that plagues most PostScript laser printers) and includes options for invoking a color-matching system turning on mirror image (T-shirts anyone?) or negative (film image) settings plus a "Print Troubleshooter" especially designed to help solve PostScript printing problems



There's even an option to print an Outside Printing Checklist, which is likely to save would be publishing mavens more than a few pieces of wasted film due to missing fonts graphics or other common problems

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WYSIWYG Web publishing from Adobe

BY JENNY WINTERBOTTOM

Product:	Adobe PageMill 1.0
From:	Adobe Systems Inc
Price:	US$150

Every month, after we've poured all of our blood, sweat and tears into publishing *The Computer Paper*, we start all over again with our online edition.

Publishing online can be a tedious task — it means dealing with HTML coding and often requires the use of multiple helper applications to get the desired result. Every month I find myself hacking endless amounts of code but not without the help of as many as eight other applications to get the job done.

Adobe PageMill 1.0 has been the much-anticipated answer to the bulk of my problems. This newly released Web page authoring software has integrated, into one package, a majority of the features that helper apps give you. PageMill's WYSIWYG (What-You-See-Is-What-You-Get) interface mirrors developments we saw in desktop publishing programs in the late 1980's, offering the ability to edit and view your pages as they would appear once uploaded on the Web. PageMill simulates how a page looks when viewed on the Web by working between edit and preview modes.

PageMill simulates how a page looks when viewed on the Web by working between edit and preview modes

You don't need to bother with manual HTML coding — PageMill offers style menus and a page attribute window where you just select the desired HTML function. Other useful time saving features offer drag-and-drop functions for images and text, easy manipulation of graphics including conversion from PICT to GIF formats, resizing, background transparency and interlacing, and options to create forms and image maps.

PageMill 1.0 is the first version of what I'm sure will become a more sophisticated program. Currently, it supports only HTML Version 2. Those who are accustomed to more elegant formatting, such as tables, will be disappointed that more sophisticated functions such as this were not included. They were likely omitted because PageMill has been targeted at beginners and those who don't require complicated pages. For example, because I'm dealing with very text heavy formatting, I didn't find this a major deficiency. Moreover, PageMill has provided a function to add raw HTML codes if necessary, for creating a more sophisticated look for your pages.

On the other hand, as I'm accustomed to viewing HTML tags as I format a page, I found it more frustrating that PageMill didn't incorporate a function to view the codes. In order to edit or check a path, you must load the file into another Web editor where you can view the code and alter it accordingly. Although PageMill promotes itself as a foolproof method for creating Web pages without knowing HTML, a user must still have some knowledge of how programs interact with the use of HTML coding on the Web.

Linking in PageMill is perhaps the most difficult task. You will have to deal with about nine different methods, depending on how and where you want your source and destination pages to be linked. Once mastered, however, they are simple and quick. Linking within pages, by creating "anchors" as destinations for your link, proved to be most troublesome. This method relies on dragging the anchor icon to the selected source text that may occur at a different location on the page — only PageMill doesn't support a scrolling drag function. This makes it nearly impossible to link, using this method, from the bottom of a page, for example, to the top of the same page.

Technical errors are common in new software and PageMill is no exception. Although errors weren't too frequent, anything that takes extra time to correct is a hassle. I discovered one of the more annoying bugs after uploading my pages to the Web. PageMill had eliminated spaces between some words. And occasionally, PageMill didn't preserve a link I had specified, but did so after I re-entered the link and saved again.

A great feature, and one of my biggest time savers, is PageMill's pasteboard function,

Continued on page **28**

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TCP Test Labs, The Computer Paper Dec/95

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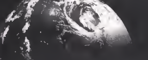

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YOUR PATH OF LEAST RESISTANCE TO THE INTERNET

PageMill 1.0

*Continued from page **26***

which works much like a library in QuarkXPress or PageMaker. This allows you to copy and paste frequently used images, text or links for quick and easy implementation into your pages while maintaining correct pathnames and codes. Adobe has also set a number of keyboard shortcuts to make formatting pages in PageMill even quicker.

Although PageMill suffers from a lack of support for newer HTML formatting features and contains some technical glitches, it will make HTML coding quicker and easier. PageMill can be used by a beginner to structure and produce a Web page, or by a seasoned Webmaster to quickly visualize and generate new ideas and designs for existing Web sites — without much effort.

You won't, however, find much in the way of extra help should you run into problems. The manual includes useful information for beginners in terms of designing and organizing a Web site and troubleshooting, but gives bare essentials for mastering other PageMill functions. Most likely you will have to seek help elsewhere if needed, as PageMill doesn't even include any help menu within the program.

So what's the bottom line? Overall, PageMill is excellent for those without much technical know how, who want to create Web sites quickly and easily. PageMill's WYSIWYG interface is simple and can execute all the necessary functions to get your pages together.

PageMill is well on its way to making Web publishing possible for more people, and definitely makes HTML a more enjoyable task

However, it requires extra help when it comes to more complicated HTML formatting. Don't assume that PageMill's all-in-one interface works independently — it still requires occasional help from other applications.

PageMill is well on its way to making Web publishing possible for more people, and definitely makes HTML a more enjoyable task. For myself, and for you other right-brained people, composing Web sites visually with this software, instead of hacking code, will be incentive enough to use PageMill regularly. The ease of graphic manipulation and the ability to create forms and image maps puts PageMill ahead of most of the rest.

PageMill requires a Macintosh computer with 68020 or greater processor, Apple system 7.5 or later, 6 MB RAM and at least 3.5 MB free hard disk space.

Adobe's other Web-authoring tool, SiteMill, should be available for the Mac when you read this. Windows versions of both PageMill and SiteMill are also being developed.

For more information on Adobe PageMill or to order directly for US$139, call 1-800-411-8657, email pagemill@adobe.com or visit their Web site at

http://www.adobe.com/Apps/PageMill/ ❑

Contact: Adobe, 800-83Fonts

Why I dumped Adobe Photoshop for Corel Photo-Paint 6.0 ...and then switched back

BY GRAEME BENNETT

Products Photo-Paint (release version/build 118) Adobe Photoshop 2 5 1 and 3 0 4
From Corel Adobe
Estimated Prices Corel $630 (estimated as part of CorelDraw 6 0 package) Adobe Photoshop 3 0 4 $770

As an avid user — and indeed teacher — of Adobe Photoshop 3 0 the idea of leaving my beloved Photoshop is almost a much of a shock to me as I suspect it may be to some of you

For one thing Corel has how shall we say a less than sterling record at releasing bug free software (not that Adobe s record is clean but let's not get into that right now) Corel Photo-Paint has always been considered something of an ugly kid sister to the tall and elegant Photoshop which has worn its image-editing crown practically unchallenged since it bested Colorstudio (from Letraset s now-defunct software division) in a skirmish several years ago

And now look at Photo-Paint! She's all grown up and she's not only fetching, she's oh so talented. Photo-Paint 6 knows all the tricks we ve come to expect of a mature image editor (I won t go into the details here) but there are several areas in which it clearly surpasses Photoshop For one thing it can work with movies. We created and edited AVI movies assembling frames from still pictures, and editing them with ease

For those users who require the ability to write interlaced GIF files with transparency values Photo-Paint supports both of these features with aplomb

Sure Adobe's offering supports GIF, but versions prior to 3 0 4 support only plain jane GIF files with neither of these attributes which are now practically de rigeur for anyone creating graphics for the World Wide Web.

For those with 3 0 4 or later a GIF89a plug in is available from Adobe However it is still rather clumsy at handling these GIFs

I also like the tremendous configurability of the Photo-Paint toolbars Although Photoshop s aren't bad in this respect Photo-Paint's tools are more flexible and the ones I use the most — the masking and text tools — are clearly superior

In Photoshop text is uneditable as soon as you click outside the selection area. In Photo-Paint it remains editable until you explicitly save it in another format or combine it with the background

And I love having multiple Undos Being able to undo something I did 73 steps ago in Photo-Paint beats the heck out of Photoshop s single Undo

Further I find that Photo-Paint has most of my favorite third-party plug ins — or at least reasonable facsimiles thereof — already built in, too The best plug ins from Kai's Power Tools (page curl) Alien Skin Software's Black Box (emboss glass FX) Xaos Tools' Terazzo (exotic textures) and numerous "painterly" effects (a la Fractal Painter) are all standard fare in Photo-Paint while all are extra-cost options in Photoshop

The fact that Kai s Power Tools 2 x didn't run at all with Adobe Photoshop 3 0 and Windows 95 made this factor the clincher

Despite the fact that Adobe has released a "beta" patch that adds several Windows 95 compatible features I've found that crashes — while running 16-bit plug-ins such as Kai's Power Tools — are all too common MetaTools the developer of KPT says an update is coming, but declined to say when

➤

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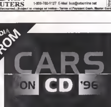

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Until then, the beta patch is also available at Adobe's web site (http://www.adobe.com). This patch also adds support for 16-bit TWAIN scanners.

Sure a few of the effects in Photoshop are more elegant than the Photo-Paint clones (lighting effects, if you'll pardon the pun, is the most glaring example and has proven to be my favorite of the Photoshop 3.0.x), but overall, Photo-Paint has more of the tools I need — at a very attractive price.

And then there are the little niceties: long file names, being able to select more than one plug-in directory, copy a file name, or perform numerous other file maintenance tasks directly from the Open dialog.

These are real-world pluses for the kind of work I do, which frequently involves switching between one program — be it a text editor, illustration program or a DTP program — and another. And so it was that I found myself thinking, "Perhaps when Adobe comes out with a fully Windows 95-compliant version of Photoshop I'll switch back. But for now, there's a new kid in town."

However, it didn't take long before I started to notice that Photo-Paint crashed occasionally, much as Photoshop 3.0.4 did when running 16-bit plug-ins. Fortunately, being 32-bit apps, these crashes never crashed the entire Windows 95 OS, but I hate losing work.

So what else is wrong with Photo-Paint? Well, the manual is awful, for one thing. It doesn't, for example, even *mention* the Movie menu and its commands. Presumably we are expected to rely on Windows Help?

As far as I can tell the import and export filters still have several problems. The "Export as AVI" option produced a corrupted file on my first try, and the QuickTime output option produced an AVI (not corrupted, thankfully) instead of a MOV file. Bizarre, but at least it solved a problem.

The only major problem was the reliability factor. Photo-Paint simply crashed too often in my tests (particularly when the display was in full screen mode). This is not to say it was unusable by any means. I used it for hours on my 8 MB and 16 MB test systems with no problems.

My tests do not validate the majority of the opinions voiced on Chris Dickman's CorelNet (www.corelnet.com), where the general tone of the users is that of a lynch mob, frustrated at the many bugs in CorelDraw 6 (build 118). While problems — and there are plenty — in CorelDraw 6 do exist, our findings suggest Photo-Paint 6 is one of the cleanest and most usable components of the new release.

As mentioned above, the lighting effects is such a pale imitation of the Photoshop version I hope Corel takes it back to the drawing board. However Photo-Paint 6 — occasional crashes, anomalies and all — is a keeper. The fact that it is still on my hard disk and in regular use puts it on my "Recommended" list, although those seeking perfection — or at least better stability — might want to obtain the bug fix update that Corel promised would be available by the "end of November."

I'm waiting for this bug-fix before I consider using CorelDraw 6 for any serious work — and the review that will undoubtedly come from that experience. I suggest you wait too. Consider that the company is still releasing bug-fixes for its 5.0 release, the latest, dubbed 5.0F5, shipped in early November.

As for Photoshop, I tried sticking with version 2.5.1 on my 8MB 486/50 computer for a while (version 3.0 was just too bulky to fit comfortably in 8MB), but I found that it did not update the screen sometimes when running on Windows 95. I'm running 3.0.4 on my 16-megabyte Pentium 90, and it is completely reliable, as long as I don't access KPT Gradient Designer and Texture Explorer. (The beta patch allows my TWAIN scanner to work without problems.)

I don't know if there is a moral to this story but I feel like the Prodigal Son returning home. Corel Photo-Paint tantalizes, a world of potential and promise, but Photoshop is safe and productive. I'm back. ❑

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Personal space:
Gigabytes for the desktop

BY CHRIS FISHER

The humble hard drive is perhaps one of the most underrated components of personal computers. Flip through the pages of any publication dealing with computer technology and the chance of finding an article on hard drives is extremely low

Yet the hard drive has been and continues to be central to the operation and performance of the personal computer. Hard drives hold the rather stigmatized position of "bottleneck" in computer architecture

To understand how the hard disk slows down your computer consider what happens when you load your operating system or when you jump into your favorite word processor

Your hard disk roars to life, reads information from the platter, and passes it to main memory (RAM) for processing In comparison to the computer's processor and memory, the hard drive is slow Your computer spends most of its time waiting for the hard drive to supply it with more data.

Computers constantly write to and read information from hard drives for a variety of reasons and in several different ways The long and short of the computer system's reliance on hard drives is that a small performance difference between hard disks can have a tremendous effect on the overall performance of your computer system.

Even a state of the art computer with the latest processor and a good complement of cache and RAM would be prone to long splutters and pauses if saddled with an older ATA drive

Price/performance: Supercharging on the cheap

Seagate recently conducted tests upgrading hard disks in machines running Windows 95 and showed that measure for measure, a hard-disk upgrade is one of the most cost-effective performance boosts you can get for a computer system

So, let us for a moment assume that you are in the market for a new hard drive. What if I told you that, by picking one brand of hard drive over another, your system could run 10 per cent faster for many operations? How about if I mentioned that there's no real price penalty to speak of? Sound interesting? Read on.

This survey takes a look at IDE (integrated device electronics) hard drives. These are the drives that are found in most personal computers. SCSI (small computer system interface) drives are the alternative to IDE. However, Mac computers aside, they are typically found in higher end workstation computers and network servers. While it is true that SCSI drives have several advantages over IDE drives in performance flexibility and capacity they are clearly not targeted towards the vast majority of computer users.

The advantages of a SCSI system over an IDE system are diminishing slowly IDE drives are getting larger, and with Enhanced IDE (EIDE), you can now easily install four drives on one system

Performance of IDE drives is also improving. Still the advantages of SCSI hard drives and controllers will not soon be eclipsed by IDE We will save further discussion of SCSI drives and controllers for another day

No longer worth a mention?

Originally we had planned to look at 850 MB hard disks but when we started talking to manufacturers we soon discovered that the "puny" 850 MB is a dying breed and is being dropped in favor of the "bigger then 1-gigabyte" variety

We called all the players in the hard-disk market and received a good selection of the latest drives. Some parties chose to send us drives well over the 1 GB mark, and being the obliging team that we are we put them through their paces

One or two of the "second tier" hard-drive suppliers declined the offer to have us evaluate their drives which wrongly or not can only lead us to infer that they don't have the right stuff

Special thanks to the folks at Globelle for supplying several of the products on short notice for this month's survey ➤

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Everybody seems to want more space. According to Dataquest, a well known high tech market and research consulting company, world wide hard-drive shipments for 1995 are expected to exceed 86.6 million units, which is a substantial 26 percent increase over the 69.3 million units shipped in 1994.

The Dataquest study further predicts that 1996 could be the most profitable year in the history of the industry. For 1995 shipments, Quantum is the big winner with 22.3 percent of the market, followed by Seagate (19.3 per cent), Western Digital (14.2 percent), Connor (13.5 percent), IBM (12.2 percent) and Maxtor (8.1 percent) — leaving 10.4 per cent for "others."

The balance of the market will almost certainly land in a different lap in 1996 as the merger between Seagate and Connor, announced Oct. 3, is finalized.

This month's Lab Test set out to answer the questions that plague anyone in the market for a new hard drive. Are some better than others? Are there any real bargains to be had?

The Test Labs typically go to great lengths to furnish readers with some form of street pricing on the items we review, but this month we have good reason not to. The hard drive market is extremely competitive and prices have dropped significantly over the last year.

In the IDE market, only a few dollars separate one brand from another. The biggest factor in price differences appears to be in where you buy the drive. A quick scan of advertisers in *The Computer Paper* shows, in some cases, more than a $50 difference on the same drive, which is more than the average

➤

What makes a good hard drive

Several factors contribute to a hard disk's performance in a computer system.

A key attribute is seek time. This is the time it takes to move the disk's head to a specific location on a disk. This indicator was heralded as the most important measurement for many years. One author notes that this is because "for a long time this was the only variable that changed".

Latency is the amount of time it takes for the correct sector to rotate under the read/write head. Latency is closely tied to the number of revolutions per minute at which the disk spins.

To clarify, in order to retrieve a piece of information, the disk first moves the head to the correct track. To get the correct packet of information, the head must wait until the required sector is rotated under it. The faster the platter spins, the quicker the sector gets to the read/write head and the faster it is able to read and write data.

Most hard disks have a healthy complement of cache memory built into them. However this is not to be confused with the cache that is built into computer motherboards.

Cache on a hard disk can significantly improve its performance as it allows the hard disk to store information that has been read contiguously with the requested data. As information is very often stored and requested in a sequential fashion, the drive can often supply the next piece of required data without going through the long operation of positioning the head and reading it in.

When, for example, you start a program, the read head is moved to the correct track on the disk and begins reading information off the disk. By the time the first needed instruction is read, the hard disk potentially has already read several subsequently needed instructions into its cache memory. These can be passed along quickly straight from memory.

Caching controllers are a popular way to really pump up a hard disk's performance.

Several vendors such as Promise, Tekram and Adaptec sell a variety of caching controllers that allow you to install large amounts of memory to hold information that the disk has already read in. These controllers can do wonders for a system's performance, but given the price of RAM, they are not a viable option for most users. The IDE controller is also critical. If your drive supports PIO modes 3 and 4, in order to take advantage of this, your controller also needs to support these modes. The combination of a new EIDE drive and a standard IDE controller will undoubtedly perform less than optimally, and vice versa. — C.F

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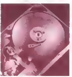
difference between brands.

So for pricing, at the time of this writing, expect to pay between $310 and $370 for a hard drive with a 1-GB capacity. This translates to 28 cents to 34 cents per megabyte. For larger hard drives (1.2 GB and 1.6 GB), the cost per megabyte stays within this window. Check local advertisements for the latest pricing.

Methodology



Our first task in order to benchmark the hard drive tests was to set up a suitable machine to use for testing.

We swapped out the motherboard of our now aging Pentium 90-MHz machine for a new board with a built-in PCI EIDE controller capable of supporting and auto-detecting PIO 4 and hard-disk geometries.

For the tests, each drive was installed and set up in the CMOS through auto detection. All options pertaining to hard disk were set to AUTO. No tweaking was attempted or performed. Though a segment of the readership may spend countless hours fiddling for increased performance, it seems fair to assume that most people prefer to let built-in setup software do the job of optimizing performance.

The tests, with the exception of the BAPCo Database Benchmark, were conducted with the external complement of 256K pipeline cache turned off.

Once the drives were installed, the machine was booted from a floppy disk, the drive was initialized using FDISK and then formatted with one primary DOS partition equal to its maximum capacity. At this point, five different benchmark programs were run against the drives to test their performance.

The benchmarks

The task of getting an accurate reading of a hard drive's performance is far from straightforward. There seems to be a general lack of agreement on the best software and methods to use for testing hard drives.

Taking the task of tracking down the fastest hard drive seriously, we ran a total of five different benchmark utilities on each of the hard drives we received, casting the chips and letting them fall where they might.

The results are indeed mixed and in some cases difficult to interpret. However, a couple of the drives performed consistently well across all benchmarks.

One interesting thing you will notice about the results from the different tests is that what constitutes the best hard drive, and by what margin, differs from one benchmark suite to another. For example, the quick benchmark utility in Symantec's Norton Utilities shows the 1.6 GB Connor drive we tested to have a performance index 62 percent higher than the 1.8 GB Hewlett Packard SureStore Drive we tested. Comparing the two drives on a different benchmark suite, however, shows a very different story. Coretest gives the HP SureStore drive a performance index a solid 150 percent higher than the same Connor Drive.

This demonstrates that computer benchmarks should be taken with a grain of salt, especially the quick and dirty kinds that test components at low levels. This was well illustrated in this lab when a combination of cache and embedded algorithms in the drives conspired to fool several of the benchmark tests.

The usual method we take when tackling different hardware components is to discuss them individually. Taking this approach with hard drives has great potential to bore readers with technical details, so we will instead investigate the drives in terms of how they performed on the different benchmark tests.

The drives are all essentially the same in appearance and function and you can get more technical specifications from the table. Performance and capacity characteristics aside, there are only a few noteworthy idiosyncrasies.

The IBM DeskStar and the Quantum Fireball will take both types of power connectors found in PCs (the standard connector or the smaller kind usually associated with 3.5-inch floppy drives).

The Seagate Decathlon ST51080A has a smaller form factor than the rest of the pack. At .75-inches high and 5 inches long, it is .25-inches lower and .75-inches shorter than today's standard size disks — good for tight spots.

The Western Digital Caviar 31600 came with a 60-page installation manual. We have seen many full computers systems arrive with far less documentation.

The tests described here have been in use through various revisions for a number of years. Qbench and Coretest can be downloaded from the Internet or BBS systems at no cost to the user.

You may want to run some of these tests on your current computer to get an idea of how your system compares and the potential for increasing performance with a hard-disk upgrade.

Remember that you need to think of the results for data throughput as relative to the machine on which the drives were tested. This is because data throughput is a measure of the drive and controller combination. Data access time is independent of the controller.

The Tests

Coretest 3.03

Coretest is an older hard-drive benchmarking utility written by Core Technologies.

This test is freely available on the Internet and considered by some to be a reasonable and impartial test of hard drives. As of version 3.02, Core International claimed there were one million copies in use world wide. Coretest gives several measures of performance.

Here we have included the statistics from the ranking screen. These are:

- Buffered read rate: This test reads the same cylinder continuously. For drives with caches, this test should indicate the maximum transfer or "burst" rate possible, since the data will always be transferred from the cache. The higher the number, the better the rate.
- Average seek time: This is calculated as the average time it takes for a full stroke

Continued on page 37

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Gigebytes for the desktop

Continued from page **34**

across the platter by the reads heads or for a half stroke.

- Track to track seek. This is the time it takes to move the head from the current track to an adjacent track
- Performance index This is the calculated overall measure of the given computer configuration An index of two is twice as fast as an index of one

This benchmark gives a tight first place to the Fujitsu drive closely followed by the Seagate and HP SureStore drives. In part these drives win out due to the calculated buffered read rate

Coretest was developed with SCSI drives in mind and puts a lot of emphasis on this measurement.

The average seek times calculated here tell a different story with the Western Digital and the Fujitsu taking first and second place and the 1 08 GB SureStore sneaking in at third place

The really interesting results from this benchmark are the slow ones Here we see that the 1 6 GB Connor and Maxtor drives are given terrible ratings While we may note that neither drive has a terrific complement of cache and both have slower than average spin rates it is hard to imagine that their performance is as bad as reported.

The benchmark could not complete its operation on the 1 GB Connor which is apparently due to the manner in which the cache is implemented on the drive

Qbench

Including this hard-drive benchmark program is controversial as it written by Quantum one of the entrants in this month's Lab Test Despite the fact that human nature (OK my interpretation of human nature) dictates that we must be skeptical of a Quantum drive's performance on this test it does seem to be one of the few decent hard drive benchmarks freely available.

The test gives two measures data transfer rate and data access time

The data transfer rate, as defined in Qbench, is the rate at which data is transferred once it has been accessed Data transfer rate is system dependent and can only be understood in terms of the machine that the benchmark is being run on

Data access time is the more traditional hard-disk performance measure and is independent of the system the benchmark is run on. It is the weighted average of individual access times for sequential and random read/write operations.

To no-one's surprise the Quantum Fireball rated high in both classes measured by this benchmark. The Fireball took first spot in data transfer rate by a good margin followed by the Western Digital and the IBM DeskStar

However the Quantum was defeated on its home ground on data access time by the Western Digital drive The other contender here is the Seagate While we do not wish to belittle Quantum's achievements on this test we prefer to let other tests tell its tale

Norton's SysInfo

Norton's Utilities is the tool of choice for many techies out there

While many of its tools such as the Disk Doctor are highly esteemed the hard-disk benchmarking component of the package can yield some interesting results.

This test measures acc[illegible] track seek time and data tra[illegible] cussed previously You may [illegible] data transfer rate statistics in N[illegible] are somewhat lower than those reported by Qbench This is because items such as command overhead in the computer and access time are not factored out in this utility

Connor drives have this benchmark totally fooled while the rest of the drives tested came back with believable access-time scores The two Connor's are reported as having ridiculously low access times of just over 4 ms

The reported data transfer rates and the access times for the other drives are somewhat more credible This test vindicates the Western Digital the Quantum and the Fujitsu as the best athletes.

Check It SysInfo

Check It is a long-standing first-class diagnostic tool for personal computers

We used the system Information utility in this package to give us yet another quick perspective on our captive drives Check It provides throughput (data transfer rate) average seek time and track to track statistics which have definitions like those used in the benchmark tests discussed above

Again the Connor drive has this benchmark spitting out unrealistic numbers This time the 1 GB drive is reported as having an average seek time of 49 ms Too bad it's not true This would make it an extremely fast drive Again the score for the Connor drive

Continued on page **39**

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Contura 430	486DX4/75	8/420	$5499	$5054
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LTE 5000C	P75	8/810	$8949	$8713
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Versa 2000	486DX4/75	8/340	$4395	$3147
Versa 4050C	P75	8/560	$5499	$5238
Versa 4050C	P90	8/810	$6599	$6326

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Gigabytes for the desktop

Continued from page **37**

can be attributed to the way the cache has been implemented.

The Western Digital and the Quantum stand apart from the crowd on this benchmark, with Seagate Decathlon closely in tow

BAPCo Benchmark.
We saved the best for last the BAPCo benchmark suite involves running real world applications on the computer and measuring the time taken to complete certain tasks

For testing hard disks we chose to run the database section of the suite This, the most disk intensive section of the benchmark runs Borland's Paradox database several times and performs — among other things — the following operations importing text files to tables running an order-entry application using forms performing queries and writing them to the disk, and generating reports and printing them to the disk

As this benchmark performs operations that many of us do in our day to-day work, we put quite a bit of faith in its ability to discriminate between real performance gains and benchmark tomfoolery.

The application in this case gives one index — the higher the index the faster the system performance A score of 200 is twice as fast as a score of 100

The big winner in this real world benchmark test is the Quantum Fireball 1080 followed very closely by the Western Digital Trailing these by a few percentage points are the Seagate Decathlon and IBM s DeskStar

The difference in performance between the Fireball and the slowest drive in the pack is a startling 10 percent The results of this benchmark validate the good performances of the Quantum and the Western Digital drives on several of the other benchmarks used in this survey

Overall the shorter benchmarks seem to indicate the Western Digital has the fastest access of the bunch and the Fireball gives slightly better throughput

Readers should note that the drives that did especially well in these test are the ones with a faster spindle spin rate The Quantum and the Seagate both rotate at 5400 rpm while the Western Digital moves at 5200 rpm These are significantly faster than the spindle speed of the rest of the drives

Editor's choice
So what's the tofu and potatoes of this ordeal? Here's where we throw caution to the wind, and answer the questions that anyone considering a new hard drive has on their mind Which one should you buy and does it really matter?

The Seagate IBM and Fujitsu proved themselves to be all round decent drives in our benchmarks.

However with little reservation we recommend that you go out and grab either the Western Digital or the Quantum Fireball drive to put in your system The drives performed excellently in every benchmark we threw at them Furthermore the price of these drives in terms of dollars per MB doesn t exact any real premium for their top-flight performances

Does it matter? Should you care? We say yes

In our BAPCo benchmark, which ran a real world disk-intensive database application the Fireball had a full 10 percent performance advantage over the slowest drive in that test It is thus no coincidence that many of the fastest systems we have seen in the lab have had Quantum s Fireball burning inside them

Modern operating systems, such as Windows 3 1x, Windows 95 OS/2 and the various flavors of UNIX use a swap file to store information that cannot fit into physical memory

These operating systems constantly page information to disk and will be more responsive with the help of either of these two drives over and above any of the other drives in this survey

While it is true that the benchmarking of hard drives is system dependent, we are confident that if you have a system equipped with a modern EIDE controller the performance advantage of these recommended hard drives is too great to be ignored ❑

See pages 40 and 41
for the complete
hard drive survey

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HARD DRIVE SURVEY

	Conner CPS1081A	Conner CPS1621A	Fujitsu M1614TUA	Hewlett Packard SureStore 1.08	Hewlett Packard SureStore 1.62
Coretest 9 00					
Buffered Read Rate (KB/Sec)	3936	3568	10272	10000	10048
Average Seek Time (ms)	N/A	12.1	9.7	9.9	11.7
Track-Track Seek (ms)	N/A	4.3	3.6	3.2	3.1
Performance Index	N/A	25.78	66.81	65.13	64.5
Qbench					
Data Acess Time (ms)	8	8.1	7.1	8.8	9.2
Data Transfer Rate (KB/Sec)	2380	2420	3610	3420	3460
Norton Sysinfo					
Performance Index	20.9	22.8	18.4	15	14
Acess Time (ms)	4.26	4.11	9.22	9.14	11.89
Track-Track Seek Time (ms)	9.94	1.26	2.6	2.81	2.49
Data Transfer Rate (KB/Sec)	1893.9	2181	2635	1778.7	1740.9
Checkit Sysinfo					
Throughput (KB/Sec)	1748	1534	1634	1634	1634
Average Seek (ms)	9.49	12.07	9.51	9.81	11.7
Track-Track (ms)	4.56	4.2	3.59	3.13	2.98
BAPCo					
Database Benchmark	331.26	337.22	348.96	337.45	333.44
Drive Specifications					
Formatted Capacity (GB)	1.08	1.62	1.09	1.08	1.62
PIO	3,4	3,4	3,4	3,4	3,4
DMA	1,2	1,2	1,2	1,2	1,2
Cache (KB)	64	64	64	128	128
Average Seek (ms)	14	14	11	12	12
RPM	3600	3600	4500	4480	4480
MTBF (Hours)	300 000	300 000	300 000	300 000	800,000
Acoustics (DBA)	38	38	31	35	35
Contact	800 626-6637	800 626-6637	800 263-8719	800 387-3867	800 387-3867

For the benchmarks that report milliseconds (ms) the lower number the better. For Transfer Rates measured in KB/Second the Bapco Benchmark and Performance Indexes the higher the number, the better.

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Coretest 3.03					
Buffered Read Rate (KB/Sec)	9440	2544	8656	10288	8728
Average Seek Time (ms)	10.4	11.7	10.1	10.8	8.4
Track Track Seek (ms)	1.9	3.1	2.6	3.8	1.9
Performance Index	61.47	19.86	56.36	66.42	54.44
Qbench					
Data Acess Time (ms)	7.3	9	8.9	8.9	5.4
Data Transfer Rate (KB/Sec)	3720	3700	5350	3280	3740
Norton SysInfo					
Performance Index	18.1	14.3	22.1	17.5	26.2
Acess Time (ms)	9.55	10.76	8.59	11.3	8.37
Track-Track Seek Time (ms)	1.44	2.5	2.57	3.7	1.33
Data Transfer Rate (KB/Sec)	2510.3	1782.2	2933.7	2346.3	3446.8
Checkit SysInfo					
Throughput (KB/Sec)	1599	1634	2277	2088	2147
Average Seek (ms)	10.26	11.47	10.56	10.71	8.5
Track Track (ms)	1.85	3.2	3.2	3.87	2.25
BAPCo					
Database Benchmark	351.76	335.45	366.98	358.24	364.46
Drive Specifications					
Formatted Capacity (GB)	1.7	1.62	1.28	1.08	1.62
PIO	3,4	3,4	3,4	3,4	3,4
DMA	1,2	1,2	1,2	1,2	1,2
Cache (KB)	128	64	128	128	128
Average Seek (ms)	12	12	12	11	10
RPM	4500	4480	5400	5400	5200
MTBF (Hours)	350 000	300,000	500 000	300,000	300 000
Acoustics (DBA)		35	32	30	37
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BY PATRICK DUFFY

It is a fact of life that software packages and the data files created by them are taking up more and more hard disk space with each new release.

A full installation of Microsoft Office can take up to 100MB or more. OS/2 will take up 80MB or more if you install all of the optional BonusPak. Even some games require more than 50MB of disk space. Install a few of these and you will soon need more disk space.

For most people, the solution is to buy another hard drive. However, adding a hard drive involves more than just going to the store, taking it home and plugging it in.

My own experience with installing hard drives over the past half year tells me that the process can be rather daunting. There are many choices to make.

IDE and SCSI

The first thing you must decide is which basic type of drive to buy. These days there are two: EIDE (enhanced integrated drive electronics) or its precusor IDE (integrated drive electronics) and SCSI (small computer system interface).

Your choice will probably be governed by the type of equipment already present in your system.

If you presently have an EIDE drive, the simplest option is to add another EIDE drive; and similarly it is simpler to add a second SCSI drive if your first drive is also a SCSI.

This does not mean SCSI drives cannot be added to EIDE only setups, or vice versa. However such setups introduce a few logistical problems (which will be covered later in this article). Still, a mixed setup may become relevant when you consider performance, cost, and future expansion requirements.

For example, as a rule, SCSI components tend to provide higher performance. SCSI also allows multitasking operating systems such as OS/2 Warp, Windows 95, Windows NT, and Linux to perform better, while EIDE does not.

Future expansion may also be a factor in your decision. SCSI systems are more flexible and expandable than EIDE setups. Present SCSI systems allow for seven (fast) or 15 (fast/wide) devices to be attached to one adapter, thereby saving slots, IRQs and port addresses as you add devices to your PC. EIDE setups typically support either two or four attached devices. In addition, only SCSI allows peripherals to be attached externally.

However, the expense of a SCSI subsystem may outweigh its advantages. To use SCSI devices, you need a SCSI adapter (few motherboard have one built in). EIDE support is either built into the motherboards or the adapter is much cheaper than a SCSI adapter.

In addition, SCSI peripherals also tend to be more expensive, because of their higher performance.

►

Preparing for the installation

Checking a few things before you start installation or even before you purchase your new drive, will make installation easier and save on return trips to the dealer for small parts you forgot the first time out.

First, make sure you have an extra drive bay to accommodate your new drive This is especially important for people who own mini tower or desktop cases, where space is at a definite premium.

The extra drive bay should be as close as possible to your existing hard drive (this is less critical for SCSI than for EIDE setups) If you do not have an extra drive bay and must have a second drive replace your case with a larger one or get a SCSI adapter and an external SCSI drive

Second, make sure you have a source of power for your new drive and that it's the right size If you have either the wrong size power connector or no extra power connectors, adapters and splitters are available from your dealer Be sure to note exactly what size and type of adapter or splitter you need

Third make sure your existing cable has a connector available to attach to your new drive and that the connector can reach to the drive bay where you are installing your new drive.

Bear in mind the following constraints the combined length of all internal and external SCSI cables may not exceed three metres (10 feet) and the spacing between connectors on the cables must be greater than .3 metres (1 foot) For EIDE cables, the cabling requirements are even stricter. If you wish to operate your drive in PIO mode 3 or 4, or to use the busmastering mode available on most new Pentium PCI motherboards, the total length of the cable and motherboard traces to the cable may not exceed .25 metres (10 inches), according to the ATA 2 specification Not adhering to this limit could result in data corruption Lower PIO modes are less restrictive

Fourth obtain all available documentation about your current hard drive You may as a result of installing a new drive, have to change jumper settings on your existing drive Having the documentation readily available will help

Finally before you start any installation (of any hardware really but of hard drives in particular) back up all your important data. Also make note of all settings in your CMOS setup so you can recover from disasters should they occur.

Of course, you should always install any hardware with the power to the computer turned off

Installing aa EIDE hard drive in an all-EIDE setup

Installation of a new EIDE hard drive can be broken down into two basic steps. setting the jumpers and enabling the drive in the BIOS.

The first thing you'll have to do is change the jumpers on your existing and new drives to reflect the fact that there are now two devices on the same cable It is necessary to designate one drive as the master and the other as the slave Follow the directions given in your documentation exactly

Bear in mind that you will likely want to keep your existing drive as the boot drive and so it should be designated as the master. The new drive will therefore be the slave.

After you have the jumpers set, mount the drive in the drive bay and hook up the necessary cables Reconnect the power to the computer after all internal connections are made.

The next thing you'll have to do (at least for DOS) is to set up your BIOS so that your new hard drive is recognized This is done by entering the CMOS-setup utility and filling in the required number of cylinders heads etc for the hard drive in the appropriate spots.

This step may be unnecessary if your BIOS autodetects your type of hard drive. In either case instructions specific to each hard drive will be provided by the manufacturer.

Installing a SCSI hard drive in a pre existing SCSI setup

Installing a new SCSI drive in a SCSI system

Continued on page 48

Conflict avoidance

If you are planning to use your second IDE channel for additional hard disks, there is one particularly annoying hardware conflict that could get in your way

Several popular sound cards have a built-in IDE controller for a CD ROM. These controllers mean trouble for any other second IDE port you want to use.

Computers can allow one second channel, and in this scenario you will have two controllers with overlapping addresses.

Unless the port on the sound card can be disabled you will not be able to get hard disks to work properly on the second channel. — *C F*

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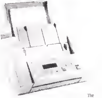
Xerox WorkCentre 250

Best of breed of multifunction devices for the small office

BY JEFF EVANS



The Xerox WorkCentre 250 arrived on the market too late for our October 1995 roundup of multifunction devices but based on a quick first viewing, we felt the WorkCentre was breaking new price/performance ground for this category

When an evaluation unit arrived at *The Computer Paper's* Test Labs we took a closer look at how Xerox combines printer copier scanner and fax capabilities in one unit Without a doubt at a street price of less than $900 the WorkCentre 250 is the current Editor's Choice for the multifunction product category

Setup is simple — a matter of removing the packing material, inserting the paper tray, plugging in the power cord, phone-line cord and parallel cable, inserting the ink cartridge, and loading the paper

Out of the box

The WorkCentre 250 looks most like a printer with a fax style key pad on its front panel Setup is simple — a matter of removing the packing material inserting the paper tray plugging in the power cord phone line cord and parallel cable, inserting the ink cartridge and loading the paper

The setup activities are described in the clearly written and illustrated Quick Installation Guide The control panel on the front makes it easy to set up your own selected fax functions

Software installation is straight forward requiring a PC with Windows 3 1 or a later version The software includes a Xerox 250 Windows Printer driver a ControlCenter program allowing setup of communications port configuration and other options, plus Delrina WinFax LITE software and the Xerox TextBridge Professional Edition OCR (optical character recognition) software

The fax uses plain paper transmits at 9 600 bps (about 10 seconds for the average page) and has a memory capacity of about 35 pages. It can also accommodate 10 one-touch or individual group dials, and up to 100 speed-dialing locations as well as programmable group fax broadcasting

There is provision for a phone answering machine connection and automatic reduction of legal size pages to letter or A4 size (to print out on a single sheet)

The printer is a 300-dpi inkjet which does a good job on plain paper at a moderate three pages per minute (slower than most current personal lasers but comparable to many current inkjet printers) varying with the complexity of the page

The copier functions include reducing enlarging (50 to 200 per cent) and collating

TextBridge is simply the best of any of the personal OCR software we've seen over the last several years, and its inclusion for free with the product is a major plus.

The 300-dpi monochrome scanner is TWAIN-compliant and a 64-grayscale capability is optional The unit's built in fax modem is 9600 bps, Class II

Other features of note include a 100-sheet paper tray which handles legal-size and smaller paper envelopes labels and transparency sheets

All of the WorkCentre software will function on any 386 PC with 4 MB or better except for TextBridge Professional which requires 8 MB of RAM and an additional 8 MB of virtual memory

TextBridge is simply the best of any of the personal OCR software we've seen over the last several years and its inclusion for free with the product is a major plus

The warranty includes an unusually good 24-hour replacement guarantee via a Xerox support line number

Criticisms

This product is extremely well designed, but we do have a few quibbles. First the fax/modem speed at 9600 bps, is probably OK for faxing (an increasing number of faxes are 14 400 bps) but is just too slow for data communications

You'll still need to purchase a 28 800 bps modem especially if you are on the World Wide Web Also for a personal (SOHO) device the lack of color printing capability may be a problem Aside from that and especially if you are running a small home-based office the WorkCentre 250 is the best we've seen of its kind

Contact: Xerox at 1 800 ASK XEROX

Avoid giving it away for free

BY DOUGLAS GRAY

If you are currently providing advisory or consulting services in a computer-related field or other areas are you getting full value for your time and skill? Clients can innocently or intentionally obtain your services for free unless you are alert

At times you may decide to share your knowledge and ideas in an attempt to build goodwill with the client or prospective client. That is a judgment you will have to make at the time But you are running a business which requires income and profit. You cannot carelessly give away your product, which is your time and skill

Here are some areas in which you could end up giving free advice and a brief overview of how to avoid doing so

Potential-client interviews

A potential client may contact you and wish to discuss ideas and problems on the telephone, over lunch or in an office setting The potential client (referred to as "client" for convenience) wants to pick your brain. You willingly cooperate because you want the assignment

The strategic solution is to confirm that you do provide service in the specified area and you are available to the client on a professional basis and would be pleased to establish a relationship Answer any concerns raised by the client by asking questions aimed at drawing out information

Do not offer solutions but inform them that there are solutions to the problems discussed

Client-needs analysis

A client might perceive that a problem exists but not understand the precise nature of the problem The client implies to you that if an analysis of the needs is made with recommendations an attractive contract could immediately result.

This teaser can entice an unsophisticated or new consultant to providing a thorough diagnosis for free The risk, of course is that no contract materializes or another consultant is retained to work through the unpaid consultant's recommendations

One way to resolve this problem is to recommend that the client enter into a contract with the first stage being a diagnostic stage

After the diagnosis is made with recommendations the consultant could proceed to the next stage of contract and implement the recommendations

This way the consultant is protected by a contract, and the sincerity of the client is assured

Potential future benefit

A client may try to convince you that some future benefit such as goodwill or contacts, could arise if you performed the service

The condition for the future opportunities and contacts however is that you provide the service for free or at a reduced rate The pretext is that the client has budget restraints

One solution is to offer to re-estimate the job taking the client's budget needs into account. In other words give them a downsized bare-bones contract rather than the original comprehensive contract

This way you maintain your pricing credibility and value

Additions to the original contract

You may be asked to perform additional work outside the original contract terms This is not uncommon as all needs cannot be foreseen and changing circumstances change the needs.

This situation reinforces the importance of specifying the exact services that are to be performed in a fixed price contract

Anticipate and therefore pre-empt any ambiguity problems by including a clause stating that anything outside the contract will be considered an extra and negotiated separately

Free follow up consulting

You can run into problems when you have performed the services outlined in the contract, but the client continues to need your services for operating the project or answering staff questions

Unless you are alert to this you could provide a considerable amount of free consulting

The obvious solution is to anticipate this situation and incorporate provisions for follow up consultation fees into the original contract The contract can specify the method of payment and terms in that event ❑

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Adding a second hard drive

Continued from page **43**

can be broken down into two steps: setting the ID and setting the termination. Both procedures are relatively straightforward.

Each device on the SCSI bus is identified by a unique number called its SCSI ID. There are a few conventions to bear in mind when deciding what SCSI ID to use for your new drive. In most systems, the adapter is usually identified by ID 7, and the attached devices by IDs 0 through 6. The boot drive uses the lowest available ID. Assume here the boot drive uses ID 0. CD-ROM drives (if you have installed one) usually come configured as ID 2. You can therefore set your new hard drive to ID 1 pretty safely.

Make sure, using the documentation for your other SCSI devices, that you set it to a number which is not being used by other devices on the SCSI bus. You don't need to set the numbers in a specific order.

SCSI IDs are nearly always set by either a series of three jumpers (for internal devices) or a switch (for external devices). Your documentation will give specific details for your hardware.

Termination is a subtler issue. On a SCSI bus, the devices at the physical ends of the SCSI bus must be terminated. Termination bleeds the signal being sent down the SCSI chain to ground, eliminating reflections in the SCSI cables which might otherwise corrupt data.

If you have internal and external devices attached to your SCSI adapter, you must terminate the last device attached externally and no others, and the last device attached internally and no others. The adapter itself must not be terminated.

If you have either external devices or internal devices only, the adapter must be terminated, as well as the last device attached to the SCSI chain.

Termination on internal hard drives is controlled by the use of resistor packs and a jumper. If both the resistor pack and the jumper are in place, then the drive is said to be terminated. With both removed, the drive is said to be unterminated.

Termination on external drives may be controlled by a switch. Your documentation will have information specific to your drive for setting or unsetting termination.

After setting termination and a unique ID, connect the drive to both the internal source of power and the SCSI bus (cable) and reconnect the power to the computer. No modifications should be necessary in the CMOS.

Installing a SCSI hard drive in an all-EIDE setup

Editor's note: This configuration is difficult to set up and may not work with your system.

If you have decided to go with SCSI for a second drive (and potentially for other devices as well) and you have an EIDE setup in your computer, there are one or two extra considerations which must be made.

You must first decide whether you want to make your SCSI drive your boot drive. This is possible, but not as easy under DOS as it is under OS/2 or Windows NT.

First, disable the EIDE drive in the BIOS. This is done by simply going into the CMOS setup and setting the drive to "not installed." The computer, on booting, will not see a drive recognized in the BIOS and so will then look to the SCSI adapter to start up.

If you do this, you should be aware that, unless you have specific drivers for your EIDE drive, you may not be able to access it under native DOS.

OS/2 Warp and Windows NT will be able to see the drive, provided you have either IBM1S506.ADD (Warp) or ATDISK.SYS (NT) loaded where appropriate (Warp requires the SCSI card driver to be loaded before IBM1S506.ADD).

You should also be aware that your drive lettering will change as a result of this, and some programs which worked before from your EIDE drive may not work now.

Partitioning your hard drive

After you have your new hard drive installed you'll have to partition it. This is perhaps the simplest part of the installation phase, but at the same time it can introduce some of the subtlest problems and some of the most trouble.

How you partition your hard drive will affect how its drive letters are assigned and how efficiently the disk is used by the operating system (DOS and Windows 95 deserve special mention in this regard).

All PC-based operating systems (except for Linux and other Unix variants) assign letters to drives, and all do it in the same way. First the operating system scans all fixed hard disks for primary partitions.

The primary partitions are assigned letters starting from C:, in the order in which they are found on the hard disk. So, for example, the primary partitions on the first EIDE drive enabled in the BIOS will be designated C:, followed by D:, etc., until all primary partitions on that drive have been assigned letters. Likewise, the primary partitions on the drive at ID 0 (in a SCSI system) will be assigned C:, etc.

The process is repeated for the next drive in the system (designated D: in the BIOS or the drive at the next higher SCSI ID) until all primary partitions are assigned. ➤

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After all primary partitions have been assigned letters, extended partitions are assigned letters. The drives are done in the same order as for primary partitions and the letters assigned start where the primary partition letters ended.

This can cause problems with drive letters changing. For example, suppose your existing hard drive has a primary C: and an extended logical D: partition set up on it. Let's further suppose you have Windows installed on D: and you add a new hard drive and create a primary partition on it and some extended logical partitions. Because of this, your first primary partition will be assigned C: and your new primary partition will now be D:. What was once your D: partition will now become E: and suddenly your Windows applications will no longer run.

To avoid this problem, do not create any primary partitions on your second drive (use logical partitions only).

Partition size also affects the way your computer will use the new disk, but in a subtler way. Basically DOS and Windows 95 will use bigger partitions less efficiently than smaller ones. OS/2 Warp and Windows NT (using the HPFS and NTFS filesystems respectively) will be less affected.

The file system works by allocating portions of disk space to files in multiples of a number called the allocation unit.

HPFS, for example, will allocate disk space to files in multiples of 512 bytes, so that a 1-byte file will be allocated 512 bytes and a 513-byte file will be allocated 1,024 bytes. Once allocated to a file, the remaining disk space in that allocation unit can not be used by any other file on the disk so that, in both the examples above, 511 bytes of disk space is not used. This extra disk space is called "slack."

DOS and Windows 95 both use the FAT (file allocation table) filesystem. The FAT filesystem has a fixed number of allocation units (65,536) to which it can allocate files on any given partition.

Originally the size of the allocation unit was fixed at 512 bytes, so the maximum partition size possible for the FAT filesystem was 33,554,432 bytes, or 32 MB.

However, the partition size limit was lifted in DOS 4.01 (and later) by allowing the size of the allocation unit to grow to a maximum of 32,768 bytes. This allowed for large partitions (up to 2GB) but also created the potential for very inefficient disk usage.

Suppose, for example, that you have a directory called "\bat" in which you have 11 small batch files, each about 40 bytes long. If those 11 files were on a 2GB partition (the worst case) they would each be allocated 32K of disk space, for a total of 352K, although the files themselves only consume about 450 bytes of space. This means that more than 351K of disk space is allocated as slack, unusable by anything else on the disk. It is not uncommon for DOS to report that the disk is full with several hundred MB of space still unused on large partitions.

Therefore, you should keep your partition sizes reasonably small to avoid scenarios like the one discussed above. To figure out the maximum partition size supported by any given allocation unit size, take the size of the allocation unit (in bytes) and multiply by 65,536 — the maximum number of allocation units on a disk.

So, for example, a 2K allocation unit will be used on a 128MB or smaller partition. Allocation unit size doubles at boundaries, so the next higher size after 2K is 4K.

To address these and other limitations in the FAT filesystem, OS/2 and Windows NT have the ability to use other filesystems.

OS/2 and Windows NT can both read from and write to something called HPFS (high performance file system). HPFS and NTFS use a fixed allocation unit size of 512 bytes, but the upper limit on the number of allocation units per partition is much larger, so both HPFS and NTFS support multiple GB partitions.

All of this comes at the expense of increased memory requirements to run the filesystem (HPFS takes up an additional 5MB of RAM by itself, along with the RAM required for its cache).

Conclusion

Installing a hard drive can be daunting. There are many choices to be made before, during, and after the installation of a new drive.

One I've not covered here in much detail is the dealer. A good dealer can help you a great deal with specific brands, and will likely have experience with the reliability of different drives and other issues not covered here.

A good dealer can and will also help translate obscure documentation and, as a last resort, will be willing to install the drive for you if you can't get it right, and to return or replace it if it fails.

Finally, if you require information beyond what is given here, good places to look are the Internet newsgroups.

Comp.sys.ibm.pc.hardware.storage and comp.periphs.scsi are valuable sources of insight and experience, and both groups have frequently asked questions (FAQ) lists which will also help you with your decision. ❑

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Hard Drive Terminology

BY CHRIS FISHER

A lot has happened in the area of storage technology since the last time *The Computer Paper* took a serious look at hard drives way back in the summer of 1993. That article had a triple beanie rating and detailed such monstrosities as how to manipulate hard disks using the debug command. While the technology employed within hard disks is no simpler now, their control, maintenance and relationship to the end user's has. Hard drives are bigger, faster and cheaper than ever before. Computers can now easily support up to four IDE drives and there are a host of new devices, such as CD-ROM's, that can be attached to the IDE bus. These improvements, and the general march of technology, have created a wealth of standards, terminology and you guessed it, acronyms. Here are a few of the more important technical terms associated with hard disks, to bring you up to speed. Many of these have been around for a long time, but some of them are quite new.

ATA and IDE IDE is an acronym for Integrated Device Electronics. This term designates a drive that has an integrated controller. Despite the fact that most PCs come with an IDE controller in them, much of the control circuitry is already built into the drive. IDE appeared in 1989 and a combination of its low cost, simple integration and reasonable performance made it a huge success. ATA, which stands for "Advanced Technology Attachment", is another acronym for IDE.

ATA 2 is an extension of the original ATA standard that adds faster PIO and DMA modes. The ATA-2 specification also improves on the Plug and Play side of things allowing the computer to talk to the drive about its features. Finally, the standard introduced LBA addressing. ATA-3 is the current standard in the works — at the time of this writing it includes enhanced security and possibly some minor performance tweaks.

ATAPI (Advanced Technology Attachment Packet Interface). This is the standard that makes it easy to connect CD-ROM drives and other devices to an IDE interface.

Block: A sector or a group of sectors.

Cache: Fast memory that is used to optimise data transfers. Hard drives have their own cache memory built into the drive.

Cylinder: Hard disks contain disks (platters) stacked on top of each other. If you take a vertical slice though the disks, all the tracks located down the axis of the slice are called a cylinder.

DMA (Direct Memory Access) modes. This term means that information is passed between a device and memory without the use of the CPU. New hard disks support Multiword DMA modes 1 and 2, which allow information to be passed at 13.3 and 16.6 MB/s. DMA modes are not considered as important as PIO modes (see below) due to a general lack of support at both the hardware and software levels.

EIDE. Enhanced IDE is an improved version of the original IDE standard. This term implies faster transfer rates, hard drives as big as 8.4 GB, LBA addressing, CD-ROM devices, and connection of four disks to your computer system. EIDE has become a catch-all phase for the changes that have happened in the hard drive arena and is based on two standards, ATA-2 and ATAPI. The term EIDE has had criticisms leveled at it for being too encompassing and vague. When you are buying a product that is EIDE, it is difficult to ascertain exactly what it is you are getting. The terms Fast ATA and Fast ATA-2 are used by some disk manufacturers. These terms are similar to EIDE but only encompass the ATA-2 standard.

Enhanced BIOS. This is a BIOS that supports drives bigger than 528 MB, which was the maximum supported size for an IDE drive a little over two years ago. An Enhanced BIOS uses a translation scheme to mediate between what the software and hardware expect. If you intend on using any of Microsoft's operating systems such as DOS, Windows 3.1x or Windows 95, you need an enhanced BIOS to support disks larger than 528 MB.

Latency: The delay between when the head is moved to a track for a piece of data and when the block of data rotates around to the spot where it can be read. The faster the drive spins, the shorter the latency and the better the drive.

LBA. Logical Block Addressing is a means of addressing the hard drive. It was introduced to IDE drives with the ATA 2 standard. This is the same addressing mode used with SCSI drives. A Large translation scheme can be used instead of LBA for accessing large hard disks. This method works with all hard disks and some recommend it over LBA.

MTBF (Mean Time Between Failure). This is the expected failure rate of the drive in terms of the number of hours that it is on. Drives today have MTBF ratings starting at 300,000 hours which translates to over 34 years.

PIO (Programmed Input/Output) Modes. The PIO mode determines transfer rates to and from the drive. PIO modes currently range from 0 to 4. The first three modes are associated with the original ATA standard, modes 3 and 4 are associated with the ATA 2 specification. The theoretical transfer rates of PIO mode 0 is 3.3 MB/s. The transfer rate for PIO modes 3 and 4 are 11.1 and 16.6 MB/s respectively. In a nutshell, the higher the PIO mode, the faster the drive sends information to the computer.

Platter: A disk made of a rigid material that is mounted on a spindle or shaft. Platters are coated with magnetic material and it is on this surface that data is actually stored. Most disks have more than one platter.

Sector: In the world of PC's this is the minimum section of a track that can be assigned to store information.

Track: A concentric magnetic pattern on the disk's surface. These act as guides for storing and reading information. ❑

If you are looking for detailed information on hard drive technology, a great starting point is Quantum's web site www.quantum.com. Much of the content here is reference oriented and there are several links to other useful sites and information sources.

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Hard disk installation 101

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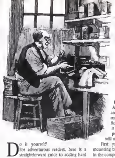


Do it yourself!
For adventurous readers, here is a straightforward guide to adding hard drives to a computer system. In addition, we will try to furnish you with one or two tips that you will not find in the slim installation manuals that accompany new hard drives.

Hardware for your hardware

A very common oversight is to arrive home without the necessary mounting brackets or a flat cable. Before you jump into the upgrade, it is a good idea to open your computer and see exactly what you will need.

First you will likely require a set of mounting brackets to secure the hard drive in the computer. If your computer is a clone, then all you will need is a generic set of mounting brackets that any dealer can furnish you with for around $10. If, on the other hand, you own a brand name, you may need special mounting gear. You will need to go to an authorized dealer for this. Be prepared to give him/her the make and model of your computer and also be prepared to pay more. (I once paid more than $40 to get a set for a Compaq — ouch!) If you don't or can't get the correct mounting gear, then your only recourse may be twist ties and rubber bands.

The second thing you will need to check is your flat ribbon cable. If you are adding a second hard drive, ensure that it has a spare connector to accommodate it and that this connector will reach to the empty bay that will hold the drive. Many — but not all — new hard drives come with the latter items included.

If you are adding a second drive to the system, you will need an unused power cable. If there is not a free one in your computer you can purchase a Y adapter that splits one power cable into two. Again, these can be purchased for around $10, and a local dealer will be able to help you.

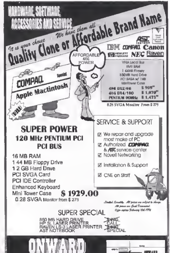
Finally, if you are installing a hard disk that is greater than 528 MB you will need to ensure that you have an enhanced BIOS in your computer to take advantage of the extra capacity. If you are not sure whether your BIOS is enhanced, consult the manual that came with your computer. Look at the list of features for the motherboard. Pentium and newer 486-class machines will almost certainly have an enhanced BIOS. A machine that is approaching its second year of service may or may not have this option.

If you do not have an enhanced BIOS, you can use the software drivers that often accompany a new drive to trick your computer into using the extra space. Other options are to obtain a BIOS upgrade or to purchase a disk drive controller that has an enhanced BIOS on board.

Before you lift that screwdriver

Back up your existing hard drive. All you need to back up are the documents and information that you have created. Backing up everything on a large hard disk can be tedious if you do not have a high capacity back up system. If disaster strikes, you can always restore programs from their original disks, but restoring your own work may mean starting all over.

Think about what you have on the computer carefully. It is easy to forget to back up many items such as your PIM database, or your Internet service provider's phone number. Backing up your data is essential. Once you start down the path of upgrading your ➤



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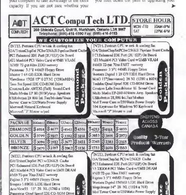

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system there is no telling what strange and wonderful things can transpire As long as you have a backup no matter what happens all is not lost

Ensure that you have a bootable floppy disk and all the items necessary to get an operating system back on your computer. If you are installing a new drive to hold the operating system you will need to be able to boot your system from a floppy drive Even if you are installing an additional hard drive it is a good idea to have a bootable floppy on hand. You may want to copy several utilities to this disk to help get the hard drive up and running. The floppies I use contain the DOS utilities SYS FDISK FORMAT SCANDISK and/or CHKDSK

Need a new controller?

If you are adding a new drive that supports PIO mode 3 or 4 and your existing interface does not support these modes investing in a controller is a good idea This will enable you to get the best performance from your hard drive A new controller that supports these modes is not overly expensive — certainly under $75 They are available for the VL or PCI bus

We suggest that if you are buying a new drive and your existing controller does not support its features you should get a new one Any local computer dealer should be able to point you in the right direction

EIDE controllers are also available, from Adaptec and Promise that allow older computers with ISA buses to support features of EIDE drives Only in the last couple of years have computers begun to support capacities greater than 528MB Generally, these controllers are used to get around this limitation —higher transfer rates are not supported due to the restrictions of the ISA bus

Should you keep your old drive and add a new drive?

Older drives should work fine on ATA-2 interfaces as most controller interfaces have enough intelligence to realize that you are using an older drive However, some controllers could cause data corruption using the wrong PIO mode with the drives Another problem associated with using an ATA drive as a second drive in an EIDE system is that interfaces incapable of using independent timings for each drive will drop back to the lowest common denominator and cause your new drive to operate at less than its optimum Personally if I were installing a 1 GB hard drive into a system with a 250 MB or less hard disk, I would pull the latter out

Masters and Slaves

In an IDE configuration each channel needs to have a master and a slave drive If you are adding a new drive and it will be the only drive in the system then this drive needs to be set as the master It is standard for a new drive to be set as master by default so, in this case you need do nothing

If however your new drive will be the second drive in a system then one of the drives needs to be set as master and one of the drives needs to be set as slave This is accomplished by setting the appropriate jumpers on the drive Here you will need to consult the documentation that came with the drive(s) As the master drive on the primary IDE channel (drive C:) typically does the most work by virtue of housing the operating system you will want to set the fastest or biggest drive you have as master on this channel

If you are installing a third drive on the second channel on an EIDE system you would need to set the drive as master A fourth drive would be set as slave

The installation

Some sources of instruction describing the hard drive installation process first suggest that you unplug the computer before you start I suggest the opposite do not unplug the machine but make sure that it is turned off and that you will not turn it on accidentally during the installation of the drive This keeps the computer grounded and minimizes the chance that you will discharge damaging static electricity into any of its sensitive components Many computer components can be damaged or destroyed by static discharge which is why your drive arrived in an antistatic bag. During the process of installation, try not to handle the drive's exposed circuit board

A general tip for upgrading a computer is to always make sure that you can backtrack. Take notes if you have to As long as you know exactly what you have done you are in little danger as you can always put the system back to the way it was and seek help.

Actually installing the drive is simple First, attach mounting brackets to the drive, make sure that the screws are not too long and do not touch or (oh no I broke it) penetrate the circuit board underneath the drive Do not use unreasonable force A little more than hand tight should be adequate Insert the drive into the bay where it will live out its useful life and screw it in place via the holes in the drive bay to the mounting bracket

Now take the ribbon cable Notice that one side has a red strip or other distinctive marking This signifies that it goes to pin one on the drive The red strip will usually go next to the power connector on the drive Pin one will also likely be marked on the drive and should also be detailed in the manual/leaflet that came with the drive Plug in any other drives you will be using on this channel and plug the other end into the controller The controller also has a pin one and this should be marked on the board next to the connector The ribbon cable should be oriented with the red strip to pin 1 at both the drive and the controller

All that remains now is to plug the power connector into the drive Now comes victory or defeat Power on the computer and go into the CMOS setup by pressing DEL or F1 or occasionally something else watch the monitor for the phrase "Press (some key or key combination)" to enter setup as soon as the computer is turned on

This is gives you access to where the computer stores vital information on its hardware Once you are in this section you need to set the hard drive parameters for your new drive. Assuming you have an enhanced BIOS you just enter the heads cylinders and sectors that your drives have

This information can be found in the documentation that came with the drive or on the back of the drive itself In many cases you will not need to enter any information — just look for a label that says "hard drive" or "IDE" auto detection and if everything is hooked up right the computer will know exactly how to fill in the information for you. If all is well your new hard drive should be ready for initialization and formatting The procedure here differs depending on what operating system you are using or intend to install Consult the documentation ❑

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Lotus SmartSuite 96

BY FRANK HILLIARD

This was supposed to be a review of the new Lotus office productivity product, SmartSuite 96. I was anxious to try it out because I'm familiar with AmiPro, the predecessor to Lotus WordPro, one of the core programs in the new bundle.

I was well aware that SmartSuite's main appeal is as groupware, called "team working" by Lotus, but I figured such features as Team Review and Team Consolidation wouldn't matter to the average user more interested in application integration.

I was wrong.

The first hint of trouble came when installing SmartSuite 96 from its CD-ROM onto my test machine, a DX4/100. The CD included the Smart Center, 1 2 3, Organizer, Lotus Approach 96, Freelance Graphics, WordPro, ScreenCam and Acrobat. The normal install, the program said, would take up 157 MB of hard drive space! Even with the larger drives available these days, the sheer bulk of SmartSuite worried me.

What really had me wondering, however, was an announcement part way through the installation. The install routine suggested I disable OLE support until required because the program would run faster without object linking and embedding on a machine with only 8 MB of RAM. Translation: 8 MB wasn't going to cut it.

The demo programs, in particular, were so slow to run, I could literally read a column of type in a magazine between the arrival of pages on the screen.

Sure enough, that was exactly the problem. Every application I tried took forever to load and switching applications was like going back to my first 286.

The demo programs, in particular, were so slow to run, I could literally read a column of type in a magazine between the arrival of pages on the screen.

I contacted the public relations company that handles Lotus products in Canada and was told that, actually, SmartSuite 96 requires 12 MB of RAM if two applications are open. I think 16 MB and a Pentium processor are more like it.

Since the majority of computers in offices and homes across Canada don't meet this high standard, we *regretfully* are not planning to review the product at this time. I would like, however, to make a suggestion. Lotus WordPro has several useful features that could be quite an asset to someone familiar with AmiPro. These include the way the dictionary highlights all misspelled words in a document at once, and the Hyper Text Markup Language filter that allows users to import and export HTML files for use on the World Wide Web (WWW).

In my opinion, Lotus should issue a new version of AmiPro, let's call it AmiPro 4.0, with these features included and all the groupware overhead dropped out. This would be a strategy somewhat similar to the one used by Corel, which continues to issue older versions of CorelDraw at different price points for different customer needs and budgets.

In the meantime, I've gone back to AmiPro with a sigh of relief. It's so much faster than WordPro, it's like getting an upgrade for my CPU. ❑

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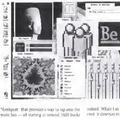
The buzz about Be

BY GRAEME BENNETT

Have you heard about the Be Box? It's a new computer platform from Be, a company started by Jean-Louis Gassée, a former bigwig in Apple's hardware division. Gassée, many believe, built the best of the "no compromise" Macs. He designed both the "wicked fast" IIfx and the most overengineered portable on the planet, the infamous Macintosh Portable. The Be Box continues this grand tradition.

The new hardware from Be might just be the hottest hardware for the money on the planet: dual PowerPC 603 chips, PCI, SCSI, EIDE, ISA, high-performance video, MIDI, infrared ports and great audio — not to mention the existence of a special, totally nonstandard 32-pin connector lovingly called the "Geekport" that provides a way to tap into the main bus — all starting at around 1600 bucks US. The operating system's not too shabby either: a multiprocessing, multitasking, microkernel-based OS with plenty of the goodies that Apple has promised for, oh, somewhere around 1997 (or as soon as it can find engineers to replace the four key members of the Copland team that recently defected to Netscape).



But is great hardware and a superior OS enough? The Be Box isn't compatible with anything that currently exists in the software world. In other words, it won't run DOS, Windows, Mac OS or anything else on the shelves of your local software retailer. But for those who remember the original Mac, it didn't either. Neither did the NeXT or Amiga or...

While I'll admit to a fondness for the underdogs (I was one of the six people who was fond of the Mindset, developed for both Atari ST and Amiga, and I nearly bought a NeXT cube until I saw how slow it was...), I am interested in helping Be, uh, be as successful as possible. Let's face it. It's from the guy who built the Golden Age Macs, and is as inspired a design as I've ever seen (and certainly better than Apple's recent offerings).

It's so gutsy (crazy?) to design a machine that's totally uncompatible with every piece of software on the market, we have to admire the vision of wanting a platform unencumbered by backward compatibility.

Like all of Gassée's greatest designs, it seems quite overengineered and that's what I like most about it—three infrared ports and a Geekport indeed. While I'm not confident Be will succeed, it deserves to, and to that end I want to help Jean-Louis and his team at Be get the word out. If the developer price is right, I might even buy one. After all, there's still a chance to write a leading app on the Be Box, and if it doesn't fly well, I love a collector's item anyway.

Check out http://www.be.com and BElieve! ❑

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BY MARTIN P. WATERMAN

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ResumeMaker Deluxe CD is touted as the best-selling resume software with career planning, but I was skeptical about its claims because of the inconsistent quality of products from Individual Software.

Some titles are very good, while others leave you wondering how a company could release such an obviously buggy or inferior program.

Of course, being in New Brunswick where jobs are scarce, I was also suspicious of a program that made the bold promise of being able to "get you the job."

ResumeMaker was not high on my list of programs to review until a friend, who recently graduated from business college, saw it on my shelf. As I now had a guinea pig, we put the product through its paces.

I tested ResumeMaker on two machines, the fastest of which was a Pentium 100 with 16 MB RAM and a double-speed CD ROM drive.

It worked well, but even with all this muscle, the videos ran painfully slow, forcing stuttering and long delays in the audio, often in the middle of sentences. This was disappointing because the virtual interview was one of the best features of this program.

In the virtual interview, job hunters are provided with numerous questions they are likely to face in an interview. They are also given the suggested answers, and the rationale behind those responses. This coaching even provided inappropriate questions, so job seekers can be prepared for any eventuality.

I particularly like the sections that dealt with salary negotiation, workplace environment and other topics that are difficult, but often come up during an interview.

On the plus side, the program offered excellent tools and confidence builders for the job seeker, including a step-by-step guide to creating a resume using a wide selection of formats, fonts and focuses. Richard Fien, an author who also offers job-hunting workshops, covered 50 essential topics for finding a career in ResumeMaker.

The program includes a section on cover letters, thank-you letters and follow-up letters. Resume writing can be difficult but, by choosing paragraphs prewritten by experts, job seekers can overcome the difficulty many people have putting their thoughts down on paper.

The contact manager allows the job seeker keep track of their activities, including contacts, companies, addresses and appointments. A career planner is also included.

My friend liked ResumeMaker and is using it in her job search. She has written up her resume in the program (which includes a word processor) and merged it with the addresses of prospective employers.

She said ResumeMaker forced her to assess her strong points and learn the latest job-seeking strategies, which include the Internet.

"A little user unfriendly but I really like it," she said. Giving it the ultimate endorsement, she is recommending the product to one of her business college instructors as a teaching aid for a module that includes resume creation and job hunting.

With the exception of the video problems, which were more aggravating than anything else, I also liked the program because of its thoroughness in preparing the user for job hunting.

However, ResumeMaker does not have an unconditional guarantee nor does it come with a built in uninstall utility – two things I look for whenever I purchase software. ❑

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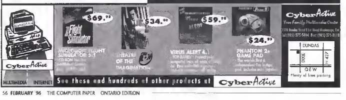
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3D glasses for your PC

BY EMRU TOWNSEND

Product: i-glasses!

Manufacturer	Virtual i-O Inc
System Requirements	Any NTSC (N American standard) video source (video version), VGA graphics (PC version)
Street Price.	$899-$999 (video version) $1199-$1399 (PC version)

The premise of Virtual i-O's i-glasses! is the same as that of any other virtual reality headset: two miniature LCD screens rest in front of your eyes, providing the images fed from an external video source, while headphones in the headset supply the sound. The LCD screens themselves are only about five centimetres (two inches) square, but their proximity to the viewer's eyes gives them the illusion of being much larger — Virtual i-O claims that it's akin to viewing a two-metre (80-in.) projection screen from a distance of 3.3 m (11 feet).

The i-glasses! are designed to receive video in the form of an NTSC signal, as from a VCR or video game system, through a standard composite cable connected to a small adapter. The adapter also has two RCA jacks for stereo sound. At its most basic level, the i-glasses! headset can be used to watch your favorite videos or to play your favorite home video games.

They serve this function well, providing a clear image and fairly clean sound, all in the privacy of your own head, as the i-glasses! do for video what Sony Walkmans do for music.

The Only Way to Game

Where the glasses' potential becomes interesting is in the add-on components for home PC use. The PC version of the i-glasses! is identical to the consumer model, but they come with extra goodies: a head tracking unit to replace the strap on the back of the glasses, a new, somewhat larger adapter, and a CD.

This adapter has an input and an output for your computer's VGA signal (effectively placing itself between the computer and the monitor), a connection for a serial cable from COM1 or COM2, and an 1/8-inch audio jack for sound from a sound card.

At this point, the i-glasses! can be used as an alternative video display with no effort beyond the connection of the larger adapter. However, they are not really suited for use with a typical display. A standard 640 x 480 display is visible on the glasses, but don't expect to be able to read your icon labels, as fine details are lost.

This is a limitation of consumer level LCD-screen technology, so this problem is not unique to the i-glasses!. Since most games are at a resolution of about 320 x 240, this shouldn't be a problem for game players, who seem to be Virtual i-O's primary audience.

Of particular interest are the glasses' 3D and head tracking capabilities. With the appropriate software, an i-glasses! user can see images in simulated 3D, much like the effect in Creature from the Black Lagoon, but in full color.

The 3D effect (also known as stereoscopic video) is achieved by taking advantage of the nature of video and the nature of human eyesight. NTSC video operates by interlacing two fields of video per image. That is, one field contains the information for lines 1, 3, 5, 7, and so on, and the other has lines 2, 4, 6, 8 and so on.

The two fields are then combined to give one video image. The i-glasses! send one field to the left eye, the other to the right. If one eye's image is slightly off from the other, then you have the illusion of 3D. Naturally, this feature depends on the video source being created specifically for 3D viewing.

The head tracker is used to follow the movements of the user's head; this information is relayed from the adapter to the computer via the serial cable. This can be used to change viewpoints in virtual reality environments, or as a replacement for a mouse. The latter seems to be a debatable feature; some people love it, while others find it unnatural to control onscreen movement by tilting their head.

The CD that comes with the glasses includes software that takes advantage of head tracking and stereoscopic viewing, such as Heretic, Magic Carpet and Dark Forces.

What Separates Them from the Rest

Many of the above features are available in other headsets, but what sets the i-glasses! apart are its distinctions in three key areas: ergonomics, comfort, and price. While other headsets can be a problem for people with glasses, the i-glasses! fit comfortably over them, eliminating the need for a focusing mechanism.

The Videomute button (a glorified on/off switch) and volume control are easily accessible on the side of the glasses, though left-handers might complain as they're on the right side. Also, the plastic visor can be removed so the user can easily focus on the outside world without having to remove the glasses. Even with the visor in place, one can look down to see the keyboard, remote control, or joystick.

Comfort is a major selling point of the i-glasses!. At only 227 grams (eight ounces), it's probably the lightest headset on the market. The glasses are also easy to put on or remove, and one can easily lie back and watch a movie or play a game while wearing them.

The Price is Right

Finally, one of the best things about the i-glasses! is the affordability. (At $1 000, affordability is definitely a personal judgment — Ed.) While the casual user will probably shy away from spending about $1 000 on them, they're still significantly cheaper than the headsets of yesteryear. Virtual i-O has managed to keep the price down without sacrificing functionality or comfort.

Emru Townsend *is a freelance writer and instructor specializing in animation and computers. He can be contacted online at emru@cam.org*

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Building the multimedia studio

Choosing the right software and hardware for multimedia

BY GRAEME BENNETT

Whether you are wanting to create original artwork, animation, digital video audio or music a computer is practically an essential tool. Even "traditional" animation and artwork is, in many cases best accomplished with the aid of the advanced software tools now available for PCs Macs and/or other platforms In this article we'll discuss some common multimedia projects and the tools that we've found to be the best for producing them

Multimedia, of course, can be defined a lot of ways For this article let's say we are trying to put together a system capable of creating and viewing good quality audio graphics animation and video for use in multimedia productions and computer based presentations.

Naturally any time the word "good" is mentioned there's the issue of just how good one wants the results to be There are "no-compromise" professional results but these tend to be extremely expensive counted in tens or even hundreds of thousands of dollars So let's be generous with the terms and define our multimedia category to include output suitable for use in presentations corporate videos Internet-based media and other "near broadcast quality" applications, but excluding the kind of $20 000-and up systems that are capable of capturing and editing SVHS-quality video This allows us to build our multimedia studio and still have a home to put it in

What shall we include? In the audio realm let's have CD-quality professional sounding MIDI music and the ability to edit music and sound and synchronize it with video or animation

Our graphics category will have to include the necessary tools to create both still and moving images with quality appropriate for a variety of output formats such as slides video CD-ROM the Internet, or on-screen presentations

Finally there's the issue of the hardware all these components are going to run on Because this issue is so central to the discussion let's start there

Choosing the right multimedia system hardware

There's no getting around it. At this stage of the game the fastest PCs are faster in multimedia than the fastest Macs and the software and hardware options for multimedia are considerably more plentiful Yet Macs have some important advantages when it comes to multimedia Ponder then the apparent paradox as you consider this statement

"If you can afford it (and maybe even if you can't) get a PC *and* a Macintosh

Ouch

There are enough programs that run on Macs only, or Windows only, that it's just better to have access to the best-of-breed in both camps. Here are a few examples

The Mac advantage: illustration and paint programs, CD recording

Image Editing while Photoshop is available and roughly comparable on both platforms, the Mac is more suitable for working with higher resolution images using programs such as Live Picture (US$995 from MetaTools) For whatever reason a lot of the leading graphics programs that should be part of your multimedia toolkit — Adobe Premiere 4 2 Illustrator 6 0 Macromedia Director Fractal Painter 4 0 KPT Bryce, and so on — show up first on the Mac Also leading-edge image editing plug-ins such as Kai's Power Tools 3 0 (our favorite Photoshop add on!) and Convolver are typically released on the Mac first Access to these programs and others like them gives the Mac based designer an undeniable advantage We prefer the Mac for still-image graphics creation and manipulation

KAI'S POWER TOOLS 3

As mentioned in the December 1995 issue the Mac has an undeniable edge in the creation of CD-ROMs too See my article entitled *Recording CD-ROMs* in that issue for details

The Windows advantage audio and video editing programs

While there's no denying that Macs are a common sight at many recording studios and audio facilities our tests suggest that the hardware and software to perform advanced audio and music manipulation is more advanced dollar for dollar on the PC You can buy a sound card with CD quality 16-bit audio recording and playback for the PC for a couple of hundred dollars whereas a Mac based 16-bit digital audio card costs around a thousand

Although most people using a Mac for audio and video work will be best served by an AV Mac (several models are available), Nubus-based Macs can add a DigiDesign Audiomedia or Sound Tools card ➤

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to provide professional audio capabilities beyond the now underwhelming 8-bit sound that comes standard on most Mac models.

Realistically, the tools for audio work are fabulous on both platforms, and we can point to as many great tools available on the Mac as those for the PC.

At the high end, the Mac has Digidesign Pro Tools, OSC's Deck (OSC was recently acquired by Macromedia), Emagic's Logic Audio, Cubase Audio, to name just a few. All of these titles are pro-quality direct-to-hard-disk audio recording systems. There's also Digidesign's Sample Cell, a computer-based sample playback system, and a number of Macintosh MIDI sequencer programs that support tape or device synchronization via SMPTE, MIDI Time code, or the (now infrequently used) FSK sync systems.

Overall, we find the system-level MIDI and audio support and multimedia video functionality of Windows 95 to exceed that of the Mac, especially when comparing systems by price.

David Kelln, of White Line Location Recording Ltd. of Vancouver, B.C., says he uses Digidesign's Session 8 running on a PC. For around $5,000, Kelln says the system brings him remarkable digital multitrack audio capabilities. (The hardware/software Session 8 system is also available for Macintosh. Software such as OSC's Deck provides similar multitrack capabilities on a Power Mac without additional hardware.)

Some users find the slow file system of the Mac OS to impede its applicability for hard-disk recording and playback. Because PowerMacs currently utilize an emulated file system (in other words, it is not written in native PowerPC code), hard disk based recording and playback of audio and video is noticeably slower than on Windows PCs, especially if the PC is using a PCI-based SCSI hard-disk controller and drive. In our tests, we were able to easily achieve full-screen, full-motion video playback on a mid-range ($1500) PC, whereas we could not get comparable performance from a Power Macintosh 8100 with 80 megabytes of RAM costing over 10 times as much.

Although a Windows based PC has performance advantages in audio and multimedia video for the reasons cited above, there are some drawbacks. Most notably, the wide array of possible hardware and software configurations on the PC creates the potential for sometimes unresolvable hardware or software conflicts. We therefore recommend going mainstream: choose leading products or those known to work on the configuration you are planning to use. If you've got a multimedia project to get finished, you don't want to be fiddling around trying to figure out why your computer keeps crashing, or the sound won't play back, or some other problem.

In our tests, we found that Windows 95 with its plug and play support, in concert with supported sound and video cards and other peripherals, proved to be the least hassle/most versatile platform for computer-based multimedia projects. (Macs are even less trouble when it comes to multimedia hardware/software configuration, although the Mac has a much more limited set of choices of expansion and configuration options.)

We configured our soon-to-be-multimedia PC — a Pentium 90 with a Triton chipset — with a SoundBlaster AWE32, to provide us with wavetable audio, DSP audio enhancement and 16-bit recording/playback capabilities. We chose a Matrox Millennium graphics card for its seriously fast video performance and MPEG and 3D acceleration under Windows 3.x.

We added 2 gigabytes of hard-disk storage, 16 megabytes of RAM, and a quad-speed Toshiba CD-ROM for a total system price (including the computer) of a little over $3,000. While more RAM and a faster CPU is always nice, we found that this system gives very good multimedia performance for the money — certainly superior to a comparably priced Macintosh.

For maximum compatibility, we configured our PC system to be able to "dual boot" Windows 3.1 and Windows 95.

While there is no single ideal system for everyone, the above mentioned components were selected for their exceptional price-to-performance ratio.

For our Mac-based work, any 68040-or better system with 16MB or more of RAM and an FPU (floating point unit) will do, although a Power Mac is most desirable for graphics related tasks. Don't even consider a Power Mac with less than 16 MB of RAM.

Digital image creation, animation

For animation work, we found that several different software tools came in handy. For scene creation, we used Photoshop and/or 3D rendering programs. Many 3-D programs (several were discussed in our September 95 issue) can output animations; we used Asymetrix 3DFX, which came bundled with the Matrox Millennium video card.

On the Mac, we preferred the animation capabilities of Specular International's Infini-D

Continued on page 63

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Fri Feb 16 1:00-3:30pm
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Windows 95 Starter Kit Thurs Feb 15, 4:00-6:30pm
This starter kit presentation will give you valuable tools for getting up and running with Windows 95. Let Zahida Khan of Learn Computer Training show you how to navigate and customize the user interface, customize the taskbar, use explorer to manage your hard disk, work with applications, and use Windows 95 accessories like Briefcase, Hyperterminal and Exchange.

Word for Windows Tips & Tricks Fri Feb 16 4:00-6:30pm
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Excel for Windows Tips & Tricks Sat Feb 17 2:30-5:00pm
Increase your productivity using Microsoft's Excel for Windows. Zahida Khan of Learn will show you how to work with multiple worksheets, calculate with formulas and functions, create charts and graphs with built-in wizards, automate worksheet styles and appearance, format data, and share data with other applications using OLE.

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Thursday Feb 15, 1:00-3:30pm
Sunday Feb 18, 11:00am-1:30pm
Interested in cutting the tax bite on your home-based business? Dan White, a Toronto-based consultant and speaker can show you how many people get by without paying taxes. Learn what you can and can not write off. You'll be shown how to run your business on a shoestring.

Creating Offshore Wealth
Sunday Feb 18, 2:30-5:00pm
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Are you fed up with paying too much tax? Dan White will show you how to set up your own offshore structure and how to avoid offshore and legally defer income tax. The rich and famous have been doing it for years. Why shouldn't you? Learn how to conduct offshore business with minimum expense, how to set up an offshore business, how to start with as little as $600, what countries to consider and more.

White's Computer Buying Clinic
Saturday Feb 17 11:00am-1:30pm
Myles White, associate editor for Toronto Computes! and Canada Computes! columnist for the Toronto Star's Fast Forward section, columnist for HC&E and author of the recently published book "How to Buy a Computer" will teach all the things you thought the folks at a computer show wouldn't tell you. Learn how to pick all the various pieces of hardware, how to read computer ads, how to negotiate with vendors, and more.

How to Repair Your PC
Sunday Feb 18, 2:30-5:00pm
Myles White teams up with computer consultant and former partner Walter Gollob of Quality Computerware to show you how to build a system from the ground up, aided by a video camera to see the fine detail. They will help you choose the right components to build your own PC, or upgrade an existing one. Together they have built many systems for clients, learning both basic and advanced tricks of the art "largely by breaking things first".

Laying the Foundations of a Home-based Business
Friday, Feb 16, 4-6:30pm
You can't start a home-based business without some sort of legal, accounting and tax planning. Learn how to do it right from the very beginning. Stewart Sklar, a lawyer and computer columnist with Home Office of Home magazine, gives you important principles of starting your own small business.

Networks for the Small Business and Home Office
Thurs, Feb 15, 11:00-1:30pm
Networking for small businesses and the home office is quickly becoming a valuable tool. Unburdensome Peer-to-Peer Networks are surprisingly easy to understand and maintain. Juergen Hesse, systems analyst with Advanced Computer Training, will give you an introduction to these networks that will tell you what hardware is required, how to install them, what the various software alternatives are capable of doing for you, what costs and savings are involved.

Starting a Computer Consulting Business
Thurs Feb 15 4:00-6:30pm
Ever thought of doing some consulting? Let Jim Steinhart tell you about the opportunities in multimedia, networks, programming and more. Learn how to assess your market, find clients, how to bid, how to bill, and choose the right computer tools. Jim has been a computer consultant since 1981 and writes the Business Advisor column in Toronto Computes!.

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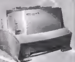

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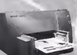

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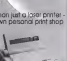

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Build the multimedia studio

Continued from page **61**

The glue we used to assemble our multimedia projects was Adobe Premiere. We tested — and in some ways preferred — Avid Videoshop (Mac) and Insync's Razor Pro (PC), but in the long run it was Premiere — specifically the Windows version — we turned to to get the grunt work done. Premiere for Windows and Premiere for Mac have remarkably different import/export capabilities. We found that the ability to convert QuickTime movies to and from the AVI format proved to be a useful feature missing from the Mac version, as did the ability to work with the popular flt and flc animation formats. For these reasons, we found ourselves turning to the PC version more than its Mac sibling.

Audio and video output

Here at *The Computer Paper*, we always have a range of projects on the go. In addition to our paper based publications, we have our World Wide Web site, with text, graphics, audio, animation and 3D-modeled content. Over the past year, we have produced and aired productions on both television and radio. In house, we regularly record our own CD-ROMs, and we produce presentations for trade shows and other projects as well. Here are our preferred authoring tools for these projects and the platforms we used to do the jobs. Note that, in most cases, these tools were chosen for their ability to get the job done quickly, not necessarily because they were "the best" in terms of features.

3D modeling and animation: Asymetrix 3DFX (Windows), Specular Infini-D (Mac), Caligari trueSpace 2 (Windows), ParaGraph Home Space Builder (Windows), Newtek LightWave (Amiga)

VRML Model creation: ParaGraph Home Space Builder (Windows), Caligari Fountain (Windows)

MIDI Sequencing: Steinberg Cubase (Windows and Mac), Cakewalk Pro for Windows (Windows)

QuickTime/MPEG conversion: Sparkle (Mac)

QuickTime/AVI conversion: Adobe Premiere (PC)

AVI Playback accelerator: VideoLogic 928Movie (Windows)

MPEG Playback: Sigma RealMagic (Windows), Matrox Millennium (Windows 3.x), XingMPEG (Windows), Sparkle (Mac)

Image Scanning: Hewlett Packard IIcx and

Continued on page **71**

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Ray Dream boosts ease-of-use with Wizard

BY GRAEME BENNETT

Ray Dream Studio
for Macintosh Windows (3.1 or higher)
Price (US$298 street)
Ray Dream Designer 4.0 available separately for US$99 street)

Originally Announced on Aug 7 1995 Ray Dream of Mountain View, is finally shipping Ray Dream Studio for Macintosh and Windows 95 *The Computer Paper* tested final releases of this 3D graphics and animation program, and it looks like a real contender in its price range The program sports a strong Windows 95 look and feel (even on the Macintosh, for better or worse) and the bevy of ease-of-use enhancements help simplify the learning curve that makes most other 3D programs difficult to learn and use.

The most important of these ease enhancements is the program's so-called Scene Wizard, which presents you with a wide choice of pre-built scenes — indoor and outdoor, with everything from sandy beaches to outer space backdrops — for your 3D models to exist in.

If for no other reason, 3D designers might want to keep Ray Dream Studio installed for access to its Scene Wizard, which we found extremely useful for creating backdrops and "set designs" on which to place and light our 3D models. It's a pity that Ray Dream Designer and Studio don't allow the editing of imported DXF models, other than rotating, resizing and other simple distortions, you can, for example, move the arms and legs of an imported model but you cannot change the expression on its face Perhaps in a future version, when QuickDraw 3D metafiles and/or some other 3D metafile standard displaces DXF as a common method for data interchange this problem will diminish but for now you shouldn't count on DXF being particularly versatile or editable in RDS.

The program is one of the few we've seen that does not require a math co-processor (FPU) However It exacts a heavy toll in RAM We were barely able to run Ray Dream Studio on a Macintosh IIfx with 8MB of RAM and Connectix's RAM Doubler Ray Dream recommends a 68040 or Power Macintosh with at least 16 MB RAM.

On a Power Mac with 24 MB RAM, however we fared much better. Ray Dream Studio consists of version 4.0 of Ray Dream Designer (version 3.1 fared very well in our recent roundup of 3D programs. That article is archived at http://tcp.ca/, as are any others on the subject of 3D.)

Ray Dream Designer 4.0 isn't the whole story in this package, though The "Studio" moniker comes from the inclusion of 500 "Dream Models," an extensions portfolio providing the modeler with a number of additional capabilities and the aforementioned animation feature.

We found the fully editable models to be more useful than those usually bundled with 3D programs Often one gets a collection of basic shapes like desks and tables that are easy to create by hand, this collection includes those, but a large number of complex items, too, like insects, vehicles, and other artistic renderings.

We were disappointed to see that the new release does not as yet support hardware 3D accelerators, VRML import/export, Apple's QuickDraw 3D (or any other standard 3D API), or Boolean functions Ray Dream president and CEO, Eric Hautemont, told *The Computer Paper* that these capabilities are planned for future releases. Also, despite the fact that the program does not require a math co-processor, it might be advantageous for users whose PCs or Macs are not so equipped. we can't help wondering if the program's sluggish performance could have been improved by including optional support for a floating point unit (According to a Ray Dream technician, the programmers have determined that the software would not benefit from hardware FPU support.)

On the brighter side the program's support for Inverse Kinematics model hierarchies deformation animations, animated texture maps and other advanced capabilities are welcome additions and make this a no brainer upgrade for existing Ray Dream Designer users, and a solid choice for new users looking for a 3D program with a good mix of features cross-platform compatibility and a nearly unbeatable price/performance ratio ❑

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1996 — the year of 3D?

A wave of 3D software breaks out of the high-end, techie ghetto

BY GRAEME BENNETT

Although 1995 was the year that 3D broke out of its high-end niche, 1996 will be the year it finally hits its stride. Here's why:

Although Matrox made a splash with its Millennium card, the first consumer-priced video card to feature hardware-accelerated 3D graphics, numerous manufacturers, including Creative Labs, the makers of that other industry standard, the Sound Blaster, will soon offer 3D cards. CL's new 3D card will sport the Glint chip, which is poised to become the best supported architecture for 3D on PCs.

Also, although Matrox was first out of the gate, the company was hurt by its dependence on Intel's buggy 3DR API and a lack of DCI or Direct X support under that other big story of 1995, Windows 95. In other words, if you wanted hardware-accelerated 3D in 1995, you had to be running Windows 3.x. With the release of several Windows 95-compatible 3D APIs in late 1995, Windows 95 will be a viable 3D platform RSN.

Also, Apple's 3D metafile format was slow out of the gate but is now supported by several leading Mac 3D programs, notably Specular Infini-D 3.1 and Strata StudioPro Blitz. Apple recently announced its first hardware accelerated 3D card code-named Gotham. This card and Matrox's recently announced Millennium accelerator will help popularize hardware-accelerated 3D on the Mac, much as the Matrox and Creative Labs (et al.) offerings are poised to do on the PC.

Need more reasons? Corel, the 800 pound gorilla of the PC graphics market, is finally getting most of the bugs out of its CorelDraw 6 package, which includes a "Corelized" version of Ray Dream Designer 3.0. With Corel it typically seems to be a yearly case of software "released in May, usable in December." Ray Dream, meanwhile, has released both Windows and Macintosh versions of its "next-generation" version of the program, dubbed Ray Dream Studio.

Another reason 3D is catching on is due to the explosive growth in the games market and the interest in 3D among the game-playing set. It seems that practically every computer using male under the age of 14 is a 3D fanatic. These kids are avid users anyway, so the under-$300 price-point for 3D/FX trueSpace LE, Simply 3D, Instant 3D and other low-end 3D software is helping to ignite a lot of interest.

Another good reason is the growth in popularity of the World Wide Web and its enabling technologies, such as Virtual Reality Modeling Language

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that allow the Web to display 3D graphics.

Finally there's the usability issue. As much as 3D software vendors would have liked us to believe otherwise, 3D software — with Asymetrix 3D/FX being the best example — only recently became easy enough for average users to enjoy.

Cheap 3D
A survey of 3D graphics programs under $100

Windows Products
VR Workshop+ ($69 from Media Synergy)
Asymetrix 3DFX (US$99, street price US$67)
Simply 3D (US$59, street price US$40)
POV-RAY (Free)

Macintosh Products
Ray Dream Designer 4 (street price $99)
Virtus VR (street price US$65)
POV-RAY (Free)

We tested these products on a variety of configurations that we believe correspond to the hardware that people purchasing low-cost 3D programs would be likely to own. (On the other hand, if you've sprung for a maxxed-out Pentium Pro or Power Macintosh system with 32 megabytes of RAM, perhaps all you can afford is a cheap program!) At any rate, we ran tests on a 486/33 with 8MB RAM, a 486/50 with 16MB RAM and a P90 with 16 MB RAM.

Our Mac tests were run on a Mac IIfx with 8MB RAM and a Power Macintosh 6100 with (ahem!) 24MB RAM.

Asymetrix 3DFX

3DFX, it must be said, is our favorite low-cost 3D program — and even when compared to the big players 3DFX has much going for it: blazing speed, real-time solid-modeled previews, ray tracing and animation output, and the ability to import models in the sophisticated 3D Studio file format. It also comes with a very user friendly "Startup Assistant" (basically a step-by-step model-building aid) that, unfortunately, does not, as of version 1.0c, work under Windows 95. Even without its assistance though, 3DFX is easy to learn and use.

There are of course weak areas, such as the program's inability to move the camera, and a less-capable DXF importer than some other packages. However all things considered, this title is our top recommendation for those seeking the best bang for the buck in cheap 3D.

VR Workshop

VR Workshop is a Canadian-made product from Media Synergy. The disk has the feel of a product you might expect to find bound into the back of a book on 3D graphics — full of demo versions of other 3D programs, a handful of lackluster modeling and rendering tools and several game demos. There are over 100 models included on the disk too, although the quality varies widely. We were surprised to see that the main modeler is DOS-based and that it imports only DXF and its own proprietary file formats. In all, it's a bit of a dog's breakfast, albeit an inexpensive one.

Instant 3D

Instant 3D is a US$59 application by Visual Software that utilizes the Object Linking and Embedding features of Windows 95 to accomplish some neat tricks. I must say it's quite nifty the way Instant 3D for Win95 does its OLE2 in-place editing manipulations right inside your host application (say, a word processor like Microsoft Word).

Unfortunately, an Instant 3D scene is limited to a single object (plus light settings, backdrops and textures, if applicable). Therefore, you will need to import a DXF (or GED) file to create anything more than the simplest scene. For adding 3D text effects to your favorite word processor though, Instant 3D lives up to its name.

Instant 3D is only $10 more than another product by Visual Software called Simply 3D. This package, which we haven't yet tested, reportedly allows the import of Adobe Illustrator and Windows Meta Files. Instant 3D is apparently a stripped-down version of the company's flagship product, the US$299 Visual Reality 2.0.

VR2.0 comes with a whopping seven CDs (!) full of models, textures, pre-built scenes, and an absolutely amazing "dinosaur world" animation. Unfortunately, our preliminary tests suggest that the product's modeler has a learning curve that is a challenge, to say the least. We'll be reviewing Visual Reality 2.0 more thoroughly in an upcoming issue.

Ray Dream Designer 4.0

Ray Dream Designer 4.0 also squeaks in under the US$100 street price point, and is the only product mentioned here that is available for both Windows and Macintosh. We'd rate Asymetrix 3DFX as the easiest, fastest, and most versatile 3D package, but Ray Dream Designer is probably the one with the best mix of modeling and advanced interface features. Coming as it did, from the Macintosh, the program has a very elegant user interface that feels similar to something you might find in a 2D drawing program, such as Illustrator, FreeHand, or CorelDraw.

Although Ray Dream Designer does not yet support 3DMF or VRML, company president Eric Hautemont indicated that the company intended to provide these features in a future update, and hinted that the VRML plug-in would very likely be free. We hope the company adds Boolean functions (the ability to combine or subtract overlapping parts of models) while they're at it.

Although Ray Dream spokesperson Teri Campbell-Chadbourne declined to elaborate when we spoke to her in mid December, she said the company will be announcing the first plug-ins for Ray Dream 4 at the January MacWorld show.

Of course, no discussion of cheap 3D programs is complete without a mention of the cheapest of them all, the venerable — free — POVRAY, which is available for many different types of computers. Be warned: POVRAY is about as user unfriendly as they get. But hey, the price is right. A good source of tips for this program is the online magazine PovZine, available at http://www.europa.com/~keithr/

EOF

There are many good 3D programs just over our arbitrary $100 price ceiling that are worth your consideration too. Some of the notable ones over $100, but under $200, include:

Strata Vision 3D 4.0 (US$150)
Adobe Dimensions 2.0 ($130)
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For further reading

Animation and 3D Modeling on the Mac (US$34.95, ISBN 0-201-88420-8, Peachpit Press)

This book is a lavishly illustrated walk-through (in the most literal sense) of the major issues relating to 3D on the Mac. It's a little frustrating, sometimes, when one of the book's great tips (virtually all of which are presented in a generic way) proves to be something that can't be accomplished on the program you have, but overall this book provides many expert insights into the mysteries of everything from alpha channels to Z-buffers.

Keith Rule, author of the excellent WCVT2POV (a free utility that converts between various 3D formats including VRML), has announced that he is working on a new book entitled *3D File Formats*. It is expected to be available in the summer of '96. ❑

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miroCONNECT

Multifunction card merges music and modem

BY GRAEME BENNETT

The miroCONNECT is a multifunction card for ISA bus PCs that puts a modem and a soundboard on a single card and with the help of some clever software adds voice-mail, speakerphone, fax, MIDI and several other functions as well

We were impressed with the quality of both the hardware and its accompanying software, despite a few problems that we encountered during our tests The unit came with a very nice clip-on microphone, a good-quality telephone jack splitter and software on CD-ROM, which made installation easy If you ve got a CD-ROM drive that is.

If not the miroCONNECT like many other sound cards has both IDE and proprietary CD-ROM connectors onboard

Complaints? We were a little disappointed that although the product is advertised as a wavetable card, it turns out that the wavetables are stored on the hard disk. While that doesn t make it sound any different It does affect the speed at which MIDI files load, and impacts available hard-disk space to the tune of 24 MB When we loaded MIDI songs there was a significant pause apparently caused by the loading of the required instrument wavesamples As far as the sound goes, the audio wavesamples are unexceptional General MIDI wavetable sounds. We prefer the samples in Turtle Beach, Gravis, Ensoniq and AWE32 cards, but not by much

Although the software installed and worked under Windows 95, the install program is not particularly Win95-friendly Part of the way through the install, the system hung After a restart, the system reported that one of Win95's DLLs had been replaced, and that the system might not work correctly Fortunately Windows 95 keeps a copy of the "good" DLL, and automatically restored the correct version when we restarted.

Also, when we restarted Windows 95, the software complained that MWAVE.INI could n t be found although it worked normally during a "cold-boot" startup We also began experiencing clicking sounds during the machine's idle time Perhaps this was related to a problem we encountered when we

➤

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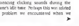

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installed Xing's XingMPEG movie playback software (which by the way does not ship with the miro product, but is bundled with some video cards). The Xing software did not play the audio during movie playback — a problem we weren't able to resolve. Both video and audio worked fine on a different system with a standard modem, a SoundBlaster AWE32 and a Matrox Millennium video card. We also tried the Xing software on a different system with a WAVjammer audio card and had no problems.

The miroCONNECT handled all other audio applications we tried without incident.

Although it shares the same (invented in Canada) 3D audio-enhancing "QSound" technology as the SoundBlaster AWE32, we're much more impressed with that card's surround sound "presence." We also found the manual skipped rather blithely over the potential situation of how you would install the CD based software if you were planning to hook the CD-ROM drive up to the miroCONNECT card itself. But the modem functions worked very well (at least at first — details are provided later in the article); our telecom connections were trouble-free.

We also liked the company's up-front-and-on-the box admission that, although the card promises compatibility with Windows, OS/2 and DOS, not all features are currently available under OS/2 and DOS. We can think of a few companies out there that could learn a thing or two from miro.

The chip that gives the board its audio and telephony prowess is IBM's MWave DSP (digital signal processor). We half expected the DSP to be unable to produce audio while the modem functions were in use, but happily this was not the case, and both features worked simultaneously. We also tested VDOLive, the amazing new video-over-the-Internet player software (from www.vdolive.com) and found that the card supported Internet connections and audio without a hitch, at least until it suddenly stopped working.

During our tests, we somehow managed to make the modem — which initially installed and worked without a hitch — stop working. Windows reported no IRQ or address conflicts and the sound (from the same card!) continued to work, but the modem simply stopped responding. Our usual good luck with Windows 95 hardware autodetection didn't help with the situation either. We were eventually able to resolve this problem after considerable effort by reinstalling the software. Another miroCONNECT user we spoke to had a similar problem after installing third-party software. He, too, resolved the problem by reinstalling the miroCONNECT software.

Verdict

As a sound card: variable — fair to good compatibility, good sound quality.

As a CD ROM interface: good.

As a telephony device: very good (when working); really a drag (when non-functional).

Overall verdict: too many caveats to heartily recommend, but the software and hardware are both very good — and we like the idea of multifunction cards in general. For intermediate-to-advanced users who won't be stymied by potential compatibility and/or reinstallation issues, the miroCONNECT gets a cautious thumbs up. ❑

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Extremely High Drool Factor

IBM's ThinkPad 760CD Notebook Sparks Techno-Lust

BY JEFF EVANS

IBM recently announced its latest ultimate dream notebook computer — a 120-MHz Pentium-based notebook that incorporates the industry's largest 12.4-inch active matrix screen, 24-bit (16.7 million) color palette, MPEG 2 high resolution 30 frame per second full-screen digital video, digital-signal processor audio, quad-speed CD-ROM, tiltable ergonomic keyboard, NTSC and PAL video input, optional video digitizing overlay and output, 1-gigabyte hard drive, up to 40 MB RAM, and a 28.8-kbps internal fax modem.

The system weighs about three kilograms (seven pounds). A slimline, lighter version without provision for the CD-ROM drive is also available.

The ThinkPad 760CD is now IBM's top-of-the-line multimedia notebook. According to company representative Kevin McKee, "The initial shipments are spoken for, but production is running at a high level, and we expect to have an ample supply."

IBM's premium ThinkPads, while too expensive for the average computer user, enjoy a "robust market" among corporate computing power users. Communications professionals and sales and management personnel who need to make business presentations on the road will find the ThinkPad 760CD's multimedia muscle highly useful.

Out Of The Box

We had the use of a 760CD for several days at the *TCP* Test Labs, and here's what we found.

When you open up the lid, the first thing you notice is that the keyboard shifts position (though it's not like the "butterfly" keyboard of the IBM 710 subnotebook previously reviewed in *The Computer Paper* — the 760CD is a full-sized notebook). This keyboard simply tilts upwards at the rear to give the user a more comfortable angle for typing. There is a good-sized palm rest area at the front of the keyboard, and the cursor is controlled via a TrackPoint II pointing device.

Two small stereo speakers are located to the left and right front of the keyboard. There are also outputs for attaching speaker cables.

One very nice user feature is a small LED screen at the left top of the keyboard, which shows battery status, disc activity, and other information.

The screen seems enormous. It almost fills the entire inside lid of the notebook — more than 12 inches on the diagonal, almost all of it truly usable, so the result is very close to a 14-inch monitor. (The viewing angle of most 14-inch CRT-based monitors is actually closer to 12 inches.)

The active matrix screen is one of the brightest and crispest we've ever seen, and

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makes it a pleasure to work with. This comes at a price, though: with the screen turned up to full brightness and with constant disc access, battery life is only a few hours.

However, with a variety of power conserving measures (such as turning down the screen and reducing hard-drive access) battery life can be greatly lengthened. As well, the ThinkPads have one of the best power management routines in the industry.

We left the unit on overnight and after a few minutes it went into a suspend mode. When we went to use it the next morning the screen popped back to life, with all the correct files displayed and the battery charge had only dropped a few percent. This feature by itself sets IBM's notebooks apart from most of the competition.

The internal 28.8-kbps modem leaves both PC card slots open for other devices and there is a plethora of telecommunication software included.

The Windows version includes FaxWorks, TranXit infrared file transfer, CompuServe and America Online signup kits, IBM Online Housecall and Lotus Mail Mobile. Networking is also supported, with a copy of IBM's NetFinity.

Modular to the Max

Our test unit came with an internal CD drive which we decided to replace with a floppy drive to transfer some files. The switch involved lifting up the keyboard, pulling out the CD drive from its connector and popping in the floppy drive. This took about three minutes, two and one-half of which were consumed by me insisting on powering the system down and then powering it back up.

Movies to Go

The most spectacular capability of the 760CD is the hardware support for MPEG (Motion Picture Experts Group) video. The unit we tested came with only 8 MB of RAM, which was enough to run Microsoft Office and Windows 3.1 or OS/2 Warp fairly comfortably. If you wish to run Windows 95 and multitask easily with some demanding applications like Corel Draw 6, however, you'd be well advised to invest in at least an extra 8 MB of RAM.

Like other ThinkPad models, the 760CD is well engineered and easy to use. It comes with both Windows 3.1 and OS/2 Warp preloaded. A Windows 95 option is expected to be added shortly.

Lest this review be entirely favorable, we did look hard for something to criticize. Hmm. Well, it was a bit of a nuisance to have to swap the CD drive and the floppy — it would be best to have an external floppy with this system to ease routine file transfer.

Even if inelegant, this would be very handy and I'd prefer it to taking the machine apart constantly. As well, you may want to buy a spare battery to extend the lifespan of the 760CD when a power outlet is not readily available. Aside from that, we couldn't find much wrong.

This is the notebook to beat in the first quarter of 1996.

And the Envelope, Please — Yipes!

Depending on configuration, the ThinkPad 760CD costs between $7,799 and $10,999. All models come with a three-year warranty. ❑

Contact: IBM Direct, 1-800-465-7999

Build the multimedia studio

continued from page 63

's scanners (Macintosh and Windows).

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Special Effects: MetaTools KPT Power Tools 3.0 (Mac), Corel Photo-Paint 6.0 (Windows), KPT Bryce (Mac), Avid TransJammer (Mac), Avid Elastic Reality (Mac), etc.

Video Editing: Adobe Premiere (Windows and Power Macintosh).

Audio recording: Sound Forge (Windows), Sound Designer (Mac).

Multimedia Authoring: Netscape Navigator (Windows and Mac), Microsoft Internet Explorer 2.0 (Windows 95), ParaGraph Home Space Builder (Windows), Asymetrix Toolbook (Windows), Claris HyperCard (Mac), Macromedia Director (Mac).

CD-ROM recording software: Astarte Toast (Macintosh).

CD-R recording hardware: Pinnacle Micro CDR (Macintosh).

Computer video output: AverKey (PC and Macintosh), Power Macintosh AV.

Genlock, titling, transitions: Newtek Video Toaster (Amiga).

Recommended books

Multimedia Studio for Windows by Jeff Burger.

The Photoshop 3.0 Wow Book, Macintosh Edition by Jack Davis ($51.95, Peachpit Press).

Recommended internet resources

newsgroups: rec.audio.pro, rec.audio.marketplace, alt.3d, comp.graphics.misc. ❑

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Pad renders rodents redundant

BY BENNEDY MAIZE

NB — Get out of the house mouse! Get down the hall track ball! I am now using nature's best computer pointing device — my index finger.

My new Alps Glidepoint keyboard features a small screen-shaped touch-sensitive pad below the arrow keys on the keyboard.

By using my finger, I can easily glide the mouse pointer around the screen. A double tab with no pressure required, launches applications. A double tab and glide handles drop-down menus. Dropping and dragging is easy.

It took a while to get comfortable with the touch-pad substitute, but now I'll never go back to a mouse. Pointing and tapping with a finger is much more comfortable and natural than the mouse, and less taxing on the wrist.

According to Alps, the touch pad uses "field-distortion sensing," a form of "capacitance-sensing." When you touch the surface, the fingertip distorts the electrical field at that spot. The pad scans the grid of electrical connectors beneath the surface and can precisely locate the fingertip, detecting very small movements.

The keyboard itself is also a nice package. It is conventional, not an attempt to solve the ergonomic problems of the device. But it has a nice feel, and a couple of very special touches.

Alps includes software with the keyboard that allows the user to program the keys and change some of the attributes of the pointer and the touchpad.

One feature is the left portion of the space bar, which can be programmed to be a destructive backspace key. That's very useful, putting the frequently used key where it is more easily available to the touch typist.

The keyboard has two other programmable keys. One is marked with a Microsoft Windows symbol. In Windows 3.1 it can be programmed to bring up the task-switching window, a nice feature. The other key, bearing a symbol of a generic icon, can be programmed to bring up a favorite application.

The keys may also be programmed in Windows 95 and in good old DOS, through the Alps software.

Since I dictate most of my copy, the ergonomics of the keyboard are not particularly important to me. But I do like the special keys.

The keyboard also comes with a plastic wrist rest that is quite serviceable. The keyboard-touchpad combination is quite reasonably priced, at about $100, and is available from major mail-order computer hardware distributors. The keyboard has a lifetime warranty, with free repair or replacement during the first five years.

So, say farewell to rodents and climb the Alps. ❑

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Making tracks: The Need for Speed driver's ed

BY GORDON GOBLE

Back in November of last year, What's Playing sorted through some of the new software coming out of Electronic Arts' Canadian division, located in Burnaby, B.C. To say that EA Canada has been hot of late is an understatement, and probably the hottest software of the bunch is Road and Track Presents The Need for Speed.

It's certainly not NASCAR Racing, but Need for Speed has just enough simulation in it that most users will be tempted to go beyond the arcade-ish fender rattling and try to break the lap times and top-speed marks that ship with the product. This article won't teach you the fine points of gracefully removing a Mazda from the track, but if you truly need more speed, this is the place to turn.

Before you hit the track, you'll want to make sure you've got the tools to get the job done. NFS is a great joystick game and, though there are a number of solid choices out there, I've used a CH Flightstick to put together some pretty impressive numbers. I use the y axis for acceleration/braking, the x axis for steering, button 1 to upshift, and 2 to downshift. Warning: gamepad and keyboard speeders won't even get close and, as a final ignominy, will automatically be drummed out of the Association of Cool Racers.

But enough of that, it's on to the game. Building the Perfect Driver begins by setting up certain control options before getting behind the wheel of the right car. While the ideal machine differs from track to track, there are a number of things that just plain can't be messed around with.

For starters, never choose an automatic transmission, as the customized shift points of a manual tranny will always get you there faster. Almost as important is a little something called driver's perspective, and although NFS supplies exterior "chase" views, ignore them and go with the cockpit view — simply, it's easier to get subtle with the steering from that perspective. And finally, never sacrifice frame rate for pretty pictures. NFS comes with detail and graphic options galore, and smooth animation aids the cause immeasurably.

The Need for Speed world is made up of seven courses, three closed-circuit and four road tracks that are made up of three segments each. To say that the racing varies from course to course is a huge understatement. However, many of the basics are interchangeable. The simulation aspects of the game demand that drivers have a thorough knowledge of each course — where a given corner begins, where it ends, and what happens in the middle of it. So taking a whole lot of time learning the nuances of each track is a smart move.

Beginners will want to start with less exotic equipment, such as a C car, and I've found that the Supra in particular is a great starting point. It's got all the elements of the rocketing A cars (Lamborghini Diablo and Ferrari 512T) in a less demanding package. Take the Supra for a spin at Rusty Springs, slowly get the speed up, then drive your target track until you're no longer guessing the whereabouts of the next turn. Then come back and read some more.

Done that? OK, it's time for round two, and here's where you'll try and put up some numbers. Now, while the whole idea here is to break some records, and one might think they'd stand a better chance alone on the track in Time Trial mode, I've found computer competition (no family wagons or cops, of course) really tends to spur me on. I dunno, maybe it's just me, but I think a solo drive often breeds complacency. Also, speed records picked up in Time Trials will always have that ▶

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little TT disclaimer running right beside them, and that really isn't racing is it?

Make sure to get those revs up into the stratosphere before the final green light to start the race. You'll be slower than a turtle in glue soup off the mark if you don't. Oh yeah work on your green light timing punching the first gear button as the light changes — not later ('cause you'll be wasting precious tenths of seconds) and definitely not earlier. It's the same amount of time at every race start so you'll get used to it.

Well, that gets us to the starting line. Rather than going into some boring advice about what to do on the track, we'll check out a hot lap at Rusty Springs. Take from this what you will but remember that although ol' Rusty may be a mite different from say Vertigo Ridge the basic driving technique should remain consistent, just geared to the track you want to conquer. Also remember that the idea here is to beat some of the records those mad racers at EA have pre-set for us. If you're going for that one unbelievable lap or segment time your approach will be somewhat different than if you want to set a new top-speed or full-race distance time.

A hot lap at the Springs

Nailing consistently high speeds at the program's "trainer track," Rusty Springs isn't as easy as it first may seem. Yes there's a lot of room here, but speeds are so high that even a brush with off-track gravel is enough to kill a promising lap. Furthermore, the horror of Turn 4 rewards only a smooth approach and will test even veteran drivers.

The car of choice here is the Lamborghini, without a doubt the fastest way to get around this track — if the drive is error free. Watch the shift points and click that button before you actually hit them (the Diablo shift points are 64 m.p.h. for second gear, 96 for third, 132 for fourth and 166 for fifth) and remember that this car is usually going quicker than you think it is.

With a couple of warmup laps under your belt and the other drivers behind you (ideally just close enough so their presence in the mirrors gives you that psychological "push"), you'll want to be crossing Start/Finish in third gear at 130 m.p.h. Shift into fourth and edge to the outside (left side) of the track. Upcoming is a sweeping right hander and approaching drivers should wait for the road to begin bending before slowly moving cross-track to the inside of that turn.

Once in the corner the right tires should be on the white line marking the inside edge of the track. The Diablo will feel like it wants to break away, but with a steady hand it won't. If you've been driving well and avoiding tire squeal (which just scrubs off velocity), the speed should be climbing, close to that 160 m.p.h. mark. You'll naturally swing high coming out of this long turn and should shift into fifth while exiting. There's a little "S" in the road here that can be straightened out merely by staying in the centre of the track.

If you've played your cards right you should be travelling 170 m.p.h. as you approach Turn 3, a dipping right hander. Move the car to the inside groove and again listen for tire squeal. Keep the accelerator planted and you should be able to stay over 160 m.p.h. as the crest of the upcoming hill comes into view.

Up to this point there's been no need for brakes but all that is about to change. As you run up the hill, keep to the middle of the track (not the outside, as the next turn will pull the pavement out from under you in a ➤

flash and you'll be on your roof) This is very important for two reasons. it's not difficult to crash here and the momentum you carry out from the exit of this corner will determine your speed through much of the rest of the next lap

Just before you crest the hill come off the accelerator (you should still be at 160 m.p.h plus) begin gently applying the brakes and as you pull back on the stick notch down into fourth This may seem like early braking, but that's a key to both real life racing and pseudo sims like NFS

Here's where this corner can become surprisingly wonderful merely through consistent driving Keep the car in the middle of the track Get the beast under 135 m p h and, just when you think you've passed the logical turn-in point, that's where to turn (just when that Fizzy Cola sign disappears out of view on the left hand side) Whatever you do, don't suddenly jerk the stick

All of this preparation should have you clipping the inside edge of the turn at nearly 120 m p h. If you've gotten this far gun it cause the road is straightening out fast and there's nothing left to hit If everything is right you'll have a shot at a lap time under 38 seconds — perform like this eight times in a row and the race record they set back at EA will take a pounding

Don't worry if this takes some time to master — it should Pretty soon all you'll be worrying about is getting by the other cars at the beginning of the race and although I said I wouldn't discuss it, here's a couple of tips for dealing with obnoxious drivers 1) Don't be nervous about squeezing between cars and the shoulder of the road There's usually just enough room here and they won't be so willing to move over and bop you one 2) If you must bash take your shot from the side — from behind has little effect on anyone but you

Have fun see you in the record books

Some early benchmarks

Here are some times from a true professional (or someone who likes to think so anyway) You'll notice the barely street legal Diablo figures prominently in this chart with the Ferrari dominating one track and the ZR 1 being the only 8 car showing Most everything here toasts the default EA-supplied times but maybe you'll score a better time with a different car ❑

TRACK	LOST VEGAS	CITY	COASTAL	ALPINE
race time	8 46 4 Lamborghini	7.36 2 Lamborghini	8 27.2 Lamborghini	10 36 8 Lamborghini
top speed	222.3 Lamborghini	202 5 Lamborghini	193 8 Lamborghini	190 1 Lamborghini
best lap	1:02 1 Lamborghini	not applicable	not applicable	not applicable

TRACK	RUSTY SPRINGS	AUTUMN VALLEY	VERTIGO RIDGE
race time	5 09 6 Lamborghini	8:25 6 Corvette	10:20 9 Ferrari
top speed	173.6 Lamborghini	184.0 Lamborghini	146 8 Ferrari
best lap	36.4 Lamborghini	1:20.5 Lamborghini	not applicable

Fortress of Louisbourg

Trip through history of outpost makes most of CD-ROM technology

BY KEITH SCHENGILI ROBERTS

Fortress of Louisbourg CD ROM v.2.0

Manufacturer	Fitzgerald Studio
System Req	Windows Multimedia PC
Price	$49 95

Now a favorite tourist attraction, Nova Scotia's Fortress at Louisbourg was witness to the struggle between the French and English to control North America. Once a major centre of New France it was present during the establishment of French rule two major battles and the transfer of power to the English This strategic 18th-century French outpost is the subject of the Fortress of Louisbourg a lovingly crafted educational CD ROM that uses this new medium to its full potential

Created by local firm Fitzgerald Studios, the encyclopedic Fortress of Louisbourg CD-ROM is crammed with information containing over 500 photographs 400 pages of text and more than 40 minutes of video It is well laid out and covers the founding of Louisbourg the battles that took place there 18th century life in the fortress and the reconstruction of the fortress that started in the 1960s The extensive video clips include interviews with some of the local archeologists, detailed tours of the buildings, and some rare underwater footage of local shipwrecks

These are also animations of the two battles between the French and the English and you can fly over a 3D model of the fortress town as it existed in 1745 The efforts to preserve the fortress over the years are also covered along with the closing of the local coal mines that initiated the restoration as a make-work project in the 1960s Touches like narration of the still pictures and 18th century folk music add to the charm of this CD-ROM

One of the interesting innovations of this

Continued on page **79**

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Simpler science

Cartoon figures help teach physics

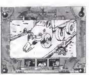
BY PEDRO ARRAIS

The Cartoon Guide to Physics

From	HarperCollins Interactive
Street Price	$49.95
Recommended ages	10-adult
System Requirements	Dual Format CD supports Multimedia Windows and Macintosh

You have heard the expression "You don't need to be a rocket scientist to do that!" But what if the career or job that your child eventually chooses *does* require some grounding in the sciences?

The Cartoon Guide to Physics is "for anyone with a passing interest in physics — or with an interest in passing physics." This is a perfect title for all those parents who flunked physics and cringe when they see a slide rule. The subject is no less confusing than it was when you were in high school but at least now you can pause the program and go over that last head-scratching lesson one more time.



The program is co-hosted by Ringo, a cartoon character who demonstrates the practical side of physics through hands-on experiments that my children really enjoyed. In fact, in many instances they were able to manipulate the experiments to gauge the different outcomes.

For instance, my daughter explored the relationship between potential energy and kinetic energy by way of a roller-coaster mechanism and a ball. She could change the size of the ball or adjust how far up the roller coaster the ball could be raised to achieve the desired results.

She's five, so the idea of kinetic or potential energy is beyond her. But it did not take her long to master the experiment. (What's an experiment, daddy?) and move on to the next one.

Lucy, a human character, hosts Lucy's World. This focuses on the basics of physics and uses clear graphics to illustrate any point or formula she introduces. There are 11 topics that are explored, again using practical examples for easy understanding. For instance, the chapter about momentum uses a baby carriage and a runaway semi-trailer as examples of easy and difficult items to slow down (no kidding).

Other chapters use baseball, skiing and even an object spinning at the end of a string above your head to illustrate the point of the lesson. It's here that you will learn about Newton's Law, atoms and neutrons. Learning was never this much fun and even adults can learn a lot here.

The Physics Hall of Fame includes short bibliographies on famous intellectuals—Plato, Galileo, Newton and Einstein, for example— as well as lesser known scientists. The glossary section is an index of anything to do with physics, with little flags appearing to indicate whether further information is available in another section. There are over 100 terms listed here, with a search possible by subject or alphabetically.

If you want to make sure your child understands physics, there is nothing that beats studying. This program's strength is the way it presents the many laws and formulas of physics so simply and humorously as to make understanding the principles easy for everyone (including parents). Maybe your child won't grow up to be a rocket scientist, but this title will certainly give him or her a boost in the right direction. ❑

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BY REITH SCHENGILI ROBERTS

Fury^3
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It's the far-off future and aliens have plunged out of the skies to wage war against Earth The planet is in shambles and it is your duty to fight back. What the aliens haven't counted on is you — and your ship The Fury is a highly maneuverable craft built for speed and to dole out withering fire-power against your foes Now it's time for you to bring the war back to the aliens home worlds — all eight of them OK, OK the plot isn't original but Fury^3 is a fun game if you crave lots of action

Fury^3 is essentially a 32-bit version of the best selling game Terminal Velocity produced by 3D Realms Fury^3 is one of the first of a small number of 32-bit games slowly appearing on the market

Fury^3 is a cross between Descent and X Wing, combining some of the better elements of both games It has the heart-pounding speed of the fastest fighters in X Wing and the nail-biting claustrophobic feel of Descent As with both of those games, you can fly and maneuver here with six degrees of freedom This gives you the ability to fly in any direction you want — but it also gives your enemies the same freedom which they often use to their ruthless advantage

Your mission is to destroy various ground installations vehicles and flying craft on an unspecified planet Your enemy's mission is of course to stop you You battle the alien nemesis on the planet's surface flying over rugged texture mapped landscapes then plunge into tunnels to take out the alien bosses The frame rate rich three-dimensional surfaces stereo sound and hoards of nasties trying to destroy you make this a fun game Win32s compatibility means that Windows 3.1 users can play this game along with people running Windows 95

Fury^3 also proves that Pentium necessary games are coming Like MechWarrior 2 and many other games that are now hitting the shelves you can only get the full impact out of the game if you have a top notch CPU (like a Pentium or a 486 100DX) and enough memory (preferably starting at 16 MB) to back it up You will still be able to play the game well enough with any lesser system but when the action gets intense expect the frame rate to slow

You'll get the best performance out of Fury^3 if you decide to load it all to your hard drive but beware — this game will eat up a sizable chunk of space For optimal performance you will need 55 MB for a full install on a Windows 95 machine or 70 MB if you are running Windows 3.1

This game is not cerebral enough to be much of a challenge to people who want some strategy with their game play One of the disappointments of Fury^3 is the enemy — the alien fighters come in fast and thick, but are pretty dumb on the whole

In some ways it is like a 3D version of the old Space Invaders game — all of your enemies are completely predictable and you have to do the same things to them (i.e. blast them into dust) many many times Mind you Space Invaders was very popular and so is Fury^3

Before purchasing the game test it out by downloading the multi-megabyte demo version from Microsoft's Web site Go to http://http://198.105.232.5/mshome/furyoffer/, fill out an obligatory form then download the program (If you are interested in doing a bit of comparison try downloading Terminal Velocity at ftp.cdrom.com in the /games/mirrors/uloweit/3drealms directory)

Fury^3 tries to make up for its lack of intellectual stimulation with sheer unremitting action This is not an instant classic and it makes no great design advances but it is an enjoyable blast-em up type of game If the demo gets your adrenaline pumping, consider investing in a copy of Fury^3 ❑

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Eyewitness Encyclopedia of Nature: Casting a digital eye toward the natural world

BY ROSS MACDONALD

Eyewitness Encyclopedia of Nature CD-ROM
From Dorling Kindersley
(General Publishing in Canada)
Estimated Street Price $48 95

Long before entering the haphazard world of journalism I had a long haphazard career as a wildlife technologist This made for a very happy situation when I recently received the Eyewitness Encyclopedia of Nature because not only was I familiar with the topic, but my experience with Dorling Kindersley's catalogue of CD-ROMs so far had indicated a consistently superb approach to multimedia publishing.

Anyone who has already dabbled with Dorling Kindersley's line will know that there used to be no small premium exacted for that quality -- DK disks virtually all sat at the $100 plus level in the past But now like everyone else they've had to reduce prices to a cool 50 bucks though somehow they've done it with absolutely no compromise in quality

Released relatively recently the Encyclopedia of Nature contains 70 animated sequences. 50 video clips 700 excellent photographs, two hours of audio, and a total of 70 000 words of text That may sound like a lot up front but the world of nature is a big place so don't expect Encyclopedia Britannica-like depth when making your explorations What is here, though is detailed enough to provide a solid, general grasp of just about any topic of interest.

The main interface for this disk is laid out like an Edwardian scientist's desk with loads of hot spots to lead you to specific subjects. It would be impractical to list all the sub-topics here but the major ones include Climate the Micro World, Prehistoric Life the Web of Life (explaining species interaction) and the Green Book (about ecology) The animal world is broken down into amphibians reptiles birds, insects invertebrates and plants and fungi

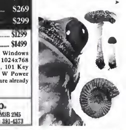
Centrally located on this very busy desk is a spinning globe atop an astrolabe type device that indicates the different habitats found around the world. Choosing "mountains" for example, stops the globe's spinning with the Rocky Mountains highlighted as a hot spot

Clicking the globe at that location reveals an impressive panoramic photograph of a Rocky Mountain scene replete with various animals and plants You can scroll around the photo with your mouse click various hot spots for more information about what you see, and initiate a short narration on the mountain habitat.

The niftiest thing, however, is a magnifying glass that you can drag and drop anywhere within the photos to get a more detailed picture-in picture of your chosen habitat

Back at the main interface, you might want to focus on birds, for example which

➤



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when clicked yields a series of sub-sets to refine your search down to such things as the general anatomy of birds or groups of bird types. I looked at water birds and got a series of species specific screens again loaded with hot spots for initiating the animal's sound the pronunciation of the name a short narration or a transfer to further related information located elsewhere on the disk

Video and animation are well utilized throughout the disk to illustrate specific topics being discussed — cell division for example — and it all transpires at a comfortable pace and a more than comfortable level

The only drawback to this CD-ROM is that it might be regarded as rather too basic by anyone with advanced interest in the natural world Though not specifically marketed as a kid's title the level of information seems best suited to the junior high crowd — or anyone who has drawn a blank on the topic since then

The main interface for this disk is laid out like an Edwardian scientist's desk, with loads of hot spots to lead you to specific subjects.

The built in quiz game (for one or two players) best exemplifies this problem in that it asks questions that anyone who remembers their high school science will not need this CD-ROM to answer.

However it must be remembered that the Eyewitness Encyclopedia of Nature is obviously not intended as a substitute for sophisticated scientific exploration Rather it makes for a solid basic knowledge of the natural world with a range and refinement well suited to those whose interest is only marginal or as a stimulus for a trip to the library for those whose interest is captured more fully

All in all this disk is well priced, extremely well done and well worth having ❑

Contact. General Publishing 30 Lesmill Rd Don Mills Ont M3B 2T6 Tel 416-445 3333

Fortress of Louisbourg

Continued from page 75

CD-ROM is the fact that there is no setup necessary for this program — you just run it from the CD-ROM This is welcome for people who have seen the real estate on their hard drives slowly nibbled away by the install programs of their other CD ROMs but it has the obvious drawback that you are limited to the speed of your CD ROM to run the multimedia presentations contained on the disk The index has been improved in this new version of the CD ROM and some new information was added on the Grand Encampment held this summer as part of the 250th anniversary celebrations The newest version of Apple's QuickTime for Windows is also included

This is one of those rare CD-ROMs where everything has come together to produce a disk which makes the whole concept of multimedia worthwhile Its ease of use the all encompassing nature of the topics covered and its flawless execution combine to make this a terrific educational CD-ROM that compares well to disks produced by multimedia heavyweights like Microsoft and Voyager Not content to rest on its laurels Fitzgerald Studios is planning to release a new CD ROM this spring on the life of Alexander Graham Bell

The Fortress of Louisbourg CD-ROM is a great introduction to the history of 18th-century Nova Scotia The only way to get a better sense of the fort is to actually visit the site

A taste of what can be seen on the disk can be found at Fitzgerald Studio's World Wide Web site The disk is also available for the Macintosh and a teacher's edition of the CD-ROM which comes with a teacher's guide is available for an extra $10 The Fortress of Louisbourg is a superlative release that deserves a place in you CD-ROM drive ❑

Contact Fitzgerald Studios (902) 562 2321 World Wide Web
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Travel through Paris with Madeline

BY PEDRO ARRAIS

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The story revolves around Madeline having to accumulate the necessary items to stage a successful puppet show to raise money for her neighbor. As she journeys through Paris, she encounters situations where she has to find one object in order to obtain another (problem solving).

In so doing, she will be exposed to over 300 words in English, French and Spanish (vocabulary). Your children also get to express their creativity by painting a backdrop and assembling the puppets for the show. They can also create an invitation for the event.

The animation is entertaining and light. Madeline dances like a little ballerina into rooms and squeaks with delight when items are found. The pointer always changes to let the operator know that an item on the screen is animated. The items are always sounded out in English and French or Spanish (whichever you had decided to learn) so after a few plays they become familiar.

Madeline's classroom offers the best opportunity to practice your language skills. Initially the new student matches pictures to other pictures, then pictures to words, and finally English words to French or Spanish words. With every six words successfully mastered, a certificate of achievement is displayed (sorry, it cannot be printed) much to the satisfaction of my young tester. Conscientious parents may want to obtain primary French or Spanish readers to supplement the program and help benefit from the initial interest.

A minor quibble is a background music track that cannot be turned down or muted, which drives some parents mad, but kids seem to love it. The title track is especially easy for children to learn and sing constantly. Another minor point: there is no way to print the scenes (for coloring etc.), which is really a shame given the rich details the program offers. Although the program lacks a save button, it will automatically save your game upon exiting.

Although the program does not claim to cater to one gender or the other, most little girls seemed to warm up to having a charismatic female lead. The character seems to embody virtues that make her an attractive role model for their own lives. Best of all, Madeline's books are widely available and ABC-TV features her on Saturday mornings in some parts of the country.

While Madeline will not turn your child into a linguist overnight, this is one of the best foreign language builders on the market that I have seen for younger children. Even if your children are not in a French immersion school, you will be amazed at the amount of French they can pick up in a very short time. Don't be surprised when your five year old translates everyday household objects into French around the dinner table. C'est magnifique! ❑

Contact: Creative Wonders, 1-800-KID-XPRT (543-9778)

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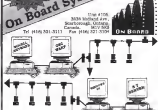

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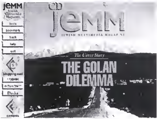

JEMM: A Jewish cultural CD-ROM magazine

BY JEFF EVANS

One of the main criticisms of computer technology (and mass media in general) is its tendency or at least potential to destroy traditional cultures by submerging them in a flood of Western commercial information.

However some would argue there is a countervailing possibility. The use of new methods of communications may allow smaller groups access to publishing and teaching tools for preserving or even reviving threatened cultural, ethnic and religious traditions.

While this potential is not guaranteed to be benign (witness online hatemongers using the Internet to deny the Holocaust occurred) it does offer a tool for cultural expression and renewal.

A case in point is CD JEMM, a quarterly interactive magazine published on CD-ROM by TNS & Associates in Cleveland, OH.

The Vol. 2 Winter 1995 disc contains a wide array of articles on subjects of concern to the Jewish community. As a non-Jew it's difficult for me to place the editorial direction of JEMM within the various communities that make up modern Judaism.

JEMM seems to be very much pro-Zionist and concerned with the preservation of Jewish culture, religion and community, yet the publication uses many of the forms of modern mass culture (for example, a part of the Teen JEMM section of the CD has a parody of the *X Files* TV series).

The creators of this title seem to be trying to reach out to the largest possible cross-section of the Jewish community.

One of the most different, enjoyable and, to me, characteristically Jewish aspects of JEMM is that moral and ethical teachings are never far away from the matters being discussed.

The article "Are You Green?" is a very interesting perspective on trees, war and morality. Jewish tradition taught that even in war, combatants should not destroy the orchards of the peoples they were attacking. To do so was considered excessive, unjust,

Continued on page 83

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Eyewitness History of the World:

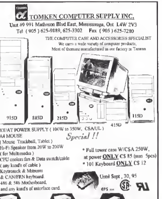
Abridging the annals of terra firma

BY ROSS MACDONALD

Eyewitness History of the World
CD ROM
From: Dorling Kindersley
(General Publishing in Canada)
Estimated Street Price: $49.95

This is yet another excellently executed title from the slowly growing catalogue of Dorling Kindersley disks. Once again approaching a largish topic from an elemental point of view, the DK people have attempted to encapsulate all the major events from the history of our humble planet and put them onto a single disk. And to some degree they have succeeded.

A back-of-the-box inventory of the Eyewitness History of the World lists 70 animations, 25 video clips, 700 photographs, three hours of narrative audio and a whopping 150,000 words of text ➤



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But where text dominates that account all the elements have been sewn together with such characteristic DK skill that you never feel like you're not always involved in an interactive environment. I have consistently touted this company as one of the few that truly understands the potential of multimedia computing.

The main interface, as with other DK educational titles, is constructed like a desk that's brimming with lots of interesting things to click on. The default setting when the disk came out of the box was for the history of the world since 1945, so the interface desk was strewn with familiar items like a model of the LEM (Lunar Excursion Module), which lead to a short film about Apollo 11, and a helicopter model attached to a video about the Vietnam war and the helicopter's role in it.

Explaining the history of the world is a daunting task, so everything has been divided and sub-divided in this main graphic to help you focus down to a specific point of interest.

Centrally located is a globe on which you can select Europe, the Americas, Africa and the Middle East, and Asia and Australasia. Once that's decided, you move your pointer down a notch to a gizmo that divides time into pre-500 BC, 500 BC to 500 AD, 500 AD to 100 AD, etc., through 10 time periods to "after 1945."

When you have selected your region and your time period, you can then ask for information about everyday life, culture, innovations or who's who (a sort of mini-encyclopedia containing the biographies of major historic figures from the period you've specified).

There's also a desk drawer labelled "documents" which will open to show some significant pieces of cellulose from the period of history you've picked. The after 1945 documents were a hot spot laden picture of a Cuban revolutionary poster (leading to a video and text presentation on '60s revolution) and the *Little Red Book* of Mao Tse Tung (leading to a similar show about contemporary China).

What's fun, though, is that when you select a time period, the decor around your main desk is altered to fit the upcoming era. My after 1945 LEM and helicopter disappeared in favor of a balalaika and long rifle, etc. when I selected 1700 to 1825. The globe also changed to one suitable to that era. And the contents of the documents drawer also changed to a hot spotted copy of the American Declaration of Independence.

Finally, and as usual with Dorling Kindersley disks, there's a quiz game of simple questions to let you test your understanding of what you've learned so far.

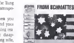
Again consistent with what seems to be growing into a sizeable CD-ROM series, the Eyewitness History of the World sits stubbornly at the rather junior end of informational and educational content. Of course there's lots and lots of material that has to be covered if this disk's title is to have any validity, but the depth of information on any given topic strikes me as rather too kindred to that of tabloid news coverage.

Still, as with the rest of the DK catalogue, the Eyewitness History of the World doesn't pretend to be anything other than what it is — a solid place to get started on a wide-ranging exploration. ❑

Contact: General Publishing, 30 Lesmill Rd., Don Mills Ont. M3B 2T6 Tel.: 416-445-3333

JEMM

*Continued from page **81***



and ungodly (ancient Greeks had similar scruples about destroying the long-term supports of living communities, but the rationalist, cosmopolitan Greeks regularly violated these principles for immediate gain).

The CD is well designed and produced. It installed and ran without any noticeable bugs or problems — not always the case with artistic or cultural software. As well as the articles in JEMM, there are ads and contacts for other Judaic software, and related products, services and groups.

JEMM represents a very interesting use of multimedia, and may be of interest to both Jews and the non Jewish layperson who wishes to learn more about the modern concerns of a culture that has made a profound contribution to the modern world. ❑

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MANY HAPPY RETURNS:

Our annual review of personal tax software for 1995

BY ROD LAMIRAND

In the world of computers, where today becomes last week faster than tomorrow hits on our desktop, few areas are as rapidly changing as that of personal tax preparation software.

The field is a microcosm of the larger software world and, as such, it too is disparate, crowded and rapidly evolving.

Although there are a few back eddies for smaller programs to languish in before they expire, the river runs fast and competition is strong for the majority of companies in this business.

There are a number of factors indicating that this area will continue to be leading edge and competitive.

Unlike regular applications, tax-preparation software must be renewed annually, which forces companies to achieve a high return-customer rate or perish.

Also unlike traditional applications, tax-preparation software is small, which translates into easily downloaded. This keeps the larger companies peering over their shoulders as smaller companies try to utilize the Internet and bypass the traditional retail channels.

Lastly, market penetration indicates there is great growth potential here and this draws the big players. Only about 30 percent of Canadian homes have a computer and less

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than 20 percent of those use tax software. That spells opportunity.

As PCs continue to invade the home, tax prep companies are positioning themselves to get and keep all the customers they can. Fierce battles are being raged for customer loyalty while on the horizon looms the big question — what if, in the near future, everyone bypasses the middle man by downloading the software and paying via the Internet?

What kind of profits could be made if the manufacturer didn't have to produce the CD/disk, manual and box or package, transport and display the product? What if there were no middleman, no district sales rep and no returns? And what about the retailers?

We didn't find anyone from the industry eager to talk about this. For now every tax prep company has to worry about the obstacles and challenges of the 1996 season.

Early-bird editions

One problems for producers is the timing difficulties inherent to the tax-software business.

Although the majority of personal tax preparation software is purchased in a six week window around February, there are still individuals who want to estimate their taxes before the end of the year.

It is costly to manufacture one product for estimating taxes in December/January and a second for processing in February/March.

Sadly, for software makers, Revenue Canada does not finalize its tax forms until Jan. 1. This is not likely to change as governments can, and do, alter our taxes throughout the whole legislative year.

For this reason, every company creating tax software prepares a non-filing edition for use from November through January.

When the final software is ready, usually mid-January, the company either sells a complete version at a discount to purchasers of the early edition, or simply sends it to them for free.

Individuals who have not purchased the early edition simply buy the final version. But buyer beware, sometimes early and filing editions are on the shelves at the same time, so give the box a good read.

The question that these considerations raise is: Why buy the early edition?

For most users there is little benefit in so-called, early-bird tax software. One of our reviewers, who purchased the early edition in 1993, didn't receive his final version until March. The kicker was that the retail cost of the final version was $5 less than that of the early version!

This pricing anomaly was likely the result of the bloodthirsty battles for market share that began two years ago when WinTax, purchased by Intuit and renamed QuickTax, leapt into the market offering their program for $29.95 — with a $20 rebate coupon inside! At that price, sales soared. Over the last two years prices have vacillated wildly from $10 to $100.

Currently, there are pricing schemes where the user pays up front, others where the user pays once and gets an annual discount, and still others where the user pays a little for the non-filing version and a little more for the final.

Volatility will continue to be the benchmark next year. Look for on-line payment to make inroads as the Internet continues to grow.

We rounded up all the players in the Canadian tax field that could be found and contacted. Those that supplied software are covered here.

The Macintosh versions from Tax Cruncher, GriffTax and QuickTax contain a very similar set of features to their DOS/Windows cousins, so only MacTaxPro is covered in any detail.

Here, then, is a survey of the personal tax preparation field, followed by *The Computer Paper's* Editor's Choice Award for 1995 in the category of Personal Tax Software.

The well established

MacTax Pro (Mac only)

From MacTax Corp.
Price $24.95 initially
$14.95 each following year

In this world of bloat and materialism, there is a place for the small and efficient, and MacTax Pro is just such an animal.

Although there are Macintosh versions of Tax Cruncher, GriffTax and QuickTax, only MacTax Pro is made solely for the Mac.

It comes on one disk and installs to a Macintosh 512Ke, Plus, SE, II, LC or DUO. It is compatible with, though not written for, System 7 so some tweaking may be needed.

MacTax Pro will run from the disk if desired or can be copied into a folder. The program uses a series of windows that ask questions rather than a forms-based interface. It has the usual Mac simplicity and is difficult to get lost in.

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You can prepare a return for your spouse and perform all the usual functions. There are forms for every province and a French version for Quebec.

MacTax Pro will not import or Efile but at its price it is a simple and workable program for your Mac. There are none of the extras found in more expensive programs, but simple calculations can be made and the program will do your taxes which, after all is the point.

This little program is big on simplicity and value

Contact: MacTax Corp 4255 Sherwoodtowne Blvd Mississauga Ont L4Z 1Y5. Tel 905-507 9345 Fax 905 568 1323

TAX made EASY, DOS only
From: La Motta Enterprises Inc.
Price: $39.95

If minimalism were a criterion for tax software TAX made EASY would win hands-down.

This program needs DOS 2.1 or later (we'd forgotten there was a DOS 2 1), a 3 5-inch or 5 25 inch floppy drive half a MB of RAM and no hard-drive space since it can run from the floppy

The company has been writing tax software for more than 10 years and is firmly ensconced in the DOS world.

The manual is a single, folded piece of paper which is all you need because the question windows and accompanying forms are as clear as they are spartan

There is nothing pretty or superfluous about this package What you get is a Lilliputian prosaic bit of DOS code that performs a function — it calculates your taxes

If you like 18th-century colonial decor, you will like TAX made EASY

Contact: La Motta Enterprises Inc., 2614 Bridge St. #204 Victoria, B C V8T 4S8. Tel 604-389-0428 Fax 604-477-8145

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dataTAX FORMS CD, DOS/Win.xx and Amiga
From: Legendary Design Technologies Inc.
Price: $19.95

This diminutive legacy application brought back a sense of nostalgia when we loaded it Even the small problem the Windows install program had with our test machine was fun (The 1995 final version of the Windows install program was rewritten so you are unlikely to have any problems)

It gave us a chance to use that DOS knowledge we rarely access anymore.

This is a one-disk program written for either DOS or the Amiga. Perfect for someone with a 286 or Amiga it needs 512K RAM and uncompresses to only 860K!

Legendary Design Technologies claims it is the only Amiga tax software program in the United States or Canada The program uses a graphical, mouse-and keyboard interface shell which is relatively smooth for a DOS application

Canada's #1 Best Selling Tax Program for the Macintosh
MacTaxPro
for the 1994 taxation year

It has the awkward non-intuitive manners common to most older apps The program correctly calculates your tax return and can save returns or load ones from previous years There is no Efile ability

Visually the interface is an ugly step-sister in the tax family but functionally it is clear and useful The product is a great price and for some users will be a good value for their money

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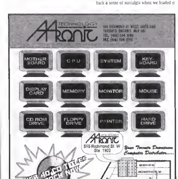
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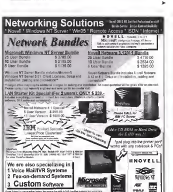
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The program is only in English but there are returns for all provinces including Quebec

The program simulates tax forms, but does so about as well as bacon bits simulate bacon

The 1995 version can be run with the mouse The interface is relatively good for a non Windows program but like the others, reminds us why the world went graphical.

The program is very basic and has no on-the-fly error checking, which is available on most newer programs For example entering an impossible date or SIN number goes unnoticed

However there is a utility called the Expert Auditor which if run will catch these mistakes That is more than some of the other DOS programs can say

The company was started in 1988 and now has a professional tax prep version called Professional Quick Returns! which offers Efiling

Efiling Professional QR ($129.95) imports data from LOTUS 1-2-3 Microsoft Money and Quicken Both versions support unlimited tax returns.

This is another usable program that suffers from its dated genealogy

Contact QR Software Corp 203 77 Queensway W Mississauga Ont. L5B 1B7 Tel. 905 279-0814 Fax 905 279-0822

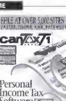
The big boys on the block

CanTax for DOS, CanTax for Windows

From CanTax a division of
Softkey Sofware Products Inc
Price $39.95

One of the oldest most-established tax-preparation programs in Canada CanTax T1 is available on one floppy disk or a CD-ROM

The program takes up 5 MB of your hard drive and needs Win 3 1 with 4 MB RAM to get up and running The DOS version needs a 286 with 640K but 1 MB is recommended



The CD version adds tips from Evelyn Jacks a Canadian author who specializes in tax savings.

CanTax is a well-established player in the personal-tax software field, with more than 12 years experience The company claims over three million income-tax returns were filed using their software last year.

The program is a workhorse that will do a good job although it is not the prettiest interface we have seen Fortunately the menus size of toolbar buttons, and various colors can all be customized.

Also you can move the toolbar to any side of the screen and set editing preferences, such as auto recalculation show field codes and prompt before close

This would be useful if we were going to spend a few weeks or longer on the program but CanTax T1 is a personal tax preparation program and as such you can only process up to 12 returns

Some consumers have rated the program's ease of use highly That may be true—perhaps after preparing a dozen returns the interface would become more natural but on first try it is a little awkward. That's not to say it is overly difficult to navigate.

The company really tries to make the user at home There is an interview-style entry method named JumpStart which makes data entry straightforward

They have even included a ruler-sized, laminated piece of cardboard with all the keyboard shortcuts to be placed above your function keys.

The program makes Efiling easy, without the need for entering complex routing and identification data manually

There are thousands of Efile sites across the country that will send your return electronically for a nominal fee In past years the average cost of electronic filing has been around $20

CanTax has all the features you would expect from a mainstream player in this field There is a good help program an automatic diagnostics function and scenario planning You can easily find any form page or line number using the GoTo or Smart Linking features

As with most programs CanTax can import from and export to Quicken and Microsoft Money As much as the program tries to be the perfect personal tax prep program, it comes off as a downgraded professional tax preparation program

As well this Windows program still maintains the mannerisms of its DOS lineage. CanTax is a slightly awkward, but quite solid, tax preparation product

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VizionTax, Win xx
ImpotVizion (French version), Win xx
From Dolmen Software Inc.
Price $49.95 (Early Bird purchasers pay $14.95 up front, then $19.95 in February)

VizionTax, winner of last year's Editor's Choice from *The Computer Paper*, has brought forward another serious contender this year.

This Windows program is available on disk or CD-ROM and has forms for all the provinces, in both French and English.

The program needs Win 3.1, 3.11 or 95 to run and, at minimum, a 386 with 4 MB of RAM and 7 MB of hard-drive space.

VizionTax has the same slick, well thought-out interface that we liked last year. However, the Step By Step interview style format omits the bear-track overview map.

However, Bernie the Bear is still around to help the user walk through this simplified way of doing taxes. Where VizionTax shines isn't in the saccharin bear cartoon but in its easily navigable interface.

The program has been put together by someone who knows how to write a Windows program.

The menus are duplicated on the toolbar by well-labeled icon buttons. Holding your mouse over most buttons brings up a short description in the Information space at bottom, and double clicking on an item brings up a logical follow-up window. These are all Windows conventions, which are often not implemented by other software makers.

This program has all the tax scenario optimization and verification functions that have come to be expected in tax-prep software, but there is more.

The Client Letter option allows you to send off a form letter to someone whose return you are calculating. This is useful because the program doesn't limit the number of returns you process!

The VizionTax spreadsheet is useful if your scenario planning is overly complex, you are doing multiple returns and want to set up a custom calculation, or you have information in Microsoft Excel format.

➤

There is also a simple financial planner that is in effect a collection of loan and mortgage calculators

As one would expect from a well-crafted program the entry boxes are smart boxes If you are filling out a space where a number would be expected then only number keys work, and ditto with letters

If you are typing in a date or phone number the program puts the brackets slashes and dashes in their spots automatically — small but demonstrative examples of good design

Like all the programs here the software is not written for Win95 It does not utilize the right mouse button, save in one minor way However it runs just fine in the new OS and never gave us any trouble

One of the best aspects of this product is its support The company has a bulletin board a 1 800 number a good manual and a great Web site In its second year with an English tax prep program Dolmen has come up with a solid intuitive Canadian product

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Brian Costello's HomeTax DOS/Win xx
L'Impot (French version), DOS/Win xx

From HomeTax a division of
Softkey Software Products Inc
Price HomeTax $39 95
L'Impot $54 95

"Practically perfect" sums up this year's version of Brian Costello's HomeTax This program is grand

The Windows program installs from three disks to take up 6.4 MB and needs a 386 or better to run It also needs 2 MB of RAM and Windows 3 1 or later

The CD-ROM version was unavailable for review at press time so is not mentioned here What is mentioned here is the beauty of the program

HomeTax offers the user two methods of interaction the EasyPrep interview-style or the more traditional forms method Either way you're going to like it

Gone is last year's annoying conveyor belt metaphor and in its place is a simple set of steps Clean, logical and comprehensible the interview lies below a help window the picture of clarity Atop the screen just below the usual Windows menus are tabbed labels that make it obvious where you are and where you are going

In the corner a golden Loonie covered by a red pie chart indicates progress through the interview You can stop at any time and switch to the forms method or access the help file.

Whatever you do and wherever you go you find well-designed buttons icons tabbed boxes and scroll bars This is how a Windows program should be

There is insufficient room to expand on the usual assortment of features such as optimizing, import/export scenario planning on the fly error checking tax summary Internet support and better quality printing

The program will do up to 16 returns and although it does not expressly promote Efiling it is possible to Efile all returns except those in Quebec

Due to the fact that HomeTax and CanTax are owned by the same company HomeTax files can be Efiled by CanTax Professional which is the software used by H&R Block offices across the country

Although the price of HomeTax is a little steep it is still a great program Besides, it is extremely likely that increased competition in this field will nudge Softkey into offering a great early edition price next season as they did for 1995

Users who received HomeTax for around $20 did very well for themselves If you want one of the best tax programs ever written buy HomeTax

➤

Take Brian Costello home with HomeTax!

Look for HOMETAX at your favourite software retailer.

HomeTax lets you do your tax returns easily, quickly and accurately and is filled with great tax tips from Brian Costello to help you really make the most of your tax dollar Even if you've never done your taxes before HomeTax will help you produce a perfect return in no time

HomeTax has more than 140 Federal & Provincial forms (250 in Quebec TP1 version) built right in and can walk you through your return step by step taking advantage of every allowable deduction

The original HomeTax "*What If*" feature lets you examine different scenarios for filing your return to determine which strategy saves you the most.

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From Intuit Canada Ltd.
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QuickTax formerly know as WinTax, is made by Intuit the heavyweight in personal-financial software in the U S.

Currently, Intuit dominates both the personal financial and the personal tax markets in the U.S with more than eight million people using Quicken and 70 percent of tax-software users buying TurboTax

If you own a copy of Intuit's Quicken you will still see grayed-out hooks to TurboTax even though it is the Canadian edition Although the American market for this category of software is dominated by one player, the Canadian field is still relatively competitive.

Intuit wants to change that and to that end has produced a high-quality product at a very good price

QuickTax is an excellent program The deluxe version for Windows comes on a CD and needs a 486 with 4 MB RAM a double speed CD-ROM and SoundBlaster-compatible sound system with speakers

The Macintosh version needs 2 MB of memory a high-density floppy and System 6 or later to run

The install program checks to see if you are using a current video driver for QuickTime and if not installs it

The install program slides smoothly into an introductory video clip from Marshall Loeb and Gena Katz. Loeb will be familiar to the users of Quicken as the former managing editor of *Fortune* and *Money* magazines and the front man for Quicken versions 4 and 5 Katz is a senior manager in the National Tax Group of Ernst & Young.

On our test system (486-100 with 8 MB RAM), the small video clips and sound ran well, even to the point where it was sometimes possible to enter data as an informative clip played.

QuickTax offers both a forms and an interview approach The forms resemble the real thing quite well and are easily navigated

The Interview style is called EasyStep and employs a very cool display that allows the user to see the form view a small explanatory video or press buttons to move forward and backward in the process

One of the best features of EasyStep is the red circle that appears on the next item to be filled out It doesn't simply move your cursor to the new position. It is like having someone standing over your shoulder showing you exactly what to do

As for its feature set, QuickTax is richer than any program out there. It includes SmartAudit Deduction Finder extensive help import/export a "What If" feature 1 800 support tax-summary window, and links to Quicken It even saves personal information on every family member and automatically updates next year's product

There are three other great tools as well Ernst & Young's *Managing Your Personal Taxes* guide, a complete guide to tax questions with suggestions for most scenarios, *201 Ways to Reduce your Taxes* and *Jacks on Tax Savings*, two books by Evelyn Jacks and lastly Financial Times BellCharts, a mutual-fund program to analyze almost every mutual fund in Canada.

There is more to say but no room to say it.

With the exception of the program's inability to be Efiled, there is very little to complain about The video clips are good, but as they must target the average user they sometimes seem overly simple

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Intuit has brought out a great tax program that is properly written for Canada and does everything that you could want You can not go wrong with QuickTax 1995

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309 Fax 1-800-324-0375/
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Whiz kids

GriffTax
From: Colin Griffiths & Associates Ltd.
Price: Personal for Macintosh: $49.95, renew $30
SprintTax (DOS/WIN xx)
From AK Microsystems
Price: Personal for Windows $39.95

Sliding between the mainstream and the legacy programs are GriffTax and SprintTax Both GriffTax and SprintTax are one in the same, the only difference being that GriffTax is the Macintosh version and SprintTax is the DOS/Windows version

If there is a box for this product, we don't know what it looks like because when we requested an evaluation copy from Colin Griffiths & Associates Ltd they told us to just download it from their Web site We did, and so can you

Each return contains French or English forms. The Install program was perfect and the initial questions straightforward

The interface is very Windows and beautifully replicates Revenue Canada forms The program is very pleasing in all its visuals and menus Users familiar with Windows conventions will get around easily

If a household is filing two returns—for example a husband and wife—each has its own window. Within each taxpayer's window are other windows for each page of the return. Also found here are utility pages such as a T1 Worksheet, Provincial Tax sheet and other specific forms applicable to a user's tax scenario

This method allows tiling or cascading information from different pages or returns. The program has the usual array of high-end functions and all of them worked perfectly

If you do download the software, you must call the company in order to use the product We suspect that by next year when secure Web transactions will be commonplace this will be one of the companies to adapt a completely electronic business-customer relationship They are well poised to do so with a good product and Web site.

Overall, the program is lean slick and easily previewed. If you have an Internet connection and don t feel bare without a manual, check out the software at their site. If you don t like it, don't buy it, but we think you will like it

Contact: Colin Griffiths & Associates Ltd 120 Pineridge Rd RR#3 Carp Ont K0A 1L0 Tel 613-839 2455 Fax 613-839-1764 English Helpline 613-839-2455 French Helpline 819-827-4492 Fax 613-839-1764
Email: grifftax@magi.com
Web. http://infoweb.magi.com/~grifftax
Contact AK Microsystems 245 West Beaver Creek Rd Suite 9B Richmond Hill Ont. L4B 1L1 Tel 905-771 1155 Fax 905-771 1344

***Tax Cruncher* (Win xx/Mac)**
From Tax Cruncher Software Inc.
Price $15.00

Another innovative company is Tax Cruncher Software This company uses your existing spreadsheet program to do tax calculations.

You may already have everything you need to perform complex financial calculations so why go out and buy a whole program when all you need are the government forms?

To the rescue comes Tax Cruncher Software It works like this you download a small 100K compressed file for your OS and your spreadsheet program Using PKUnzip you expand it to a standard spreadsheet file. You start your spreadsheet program and load the file. Enter your SIN number, then call the company's 1-800 number. Arrange payment and the company will give you an access number. Sit down at your machine, enter the number and fill in the tax form boxes. When you're done, you print a copy and mail it to Revenue Canada.

The up-side? It's cheap You are using a spreadsheet program you already know Tax Cruncher is readily accessible and takes only five minutes to download

The down side? You must have a supported spreadsheet program You must have Internet access (or use the postal system). There is no paper manual.

Overall, I like it. The concept is great, the application is smooth and the calculations are correct.

The interface takes a little getting used to since the forms lie side by side This is really just one large spreadsheet, so don t expect it to look like the real tax forms.

Tax Cruncher is available in the following formats Lotus 1-2-3 (DOS and Windows) Quattro Pro (DOS and Windows), Microsoft Excel (Macintosh and Windows) Claris Works (Macintosh and Windows) Microsoft Works (Windows)

➤

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The company says its goal is "to provide software and services that allow taxpayers to complete their tax returns as quickly as possible, at a price they cannot resist."

They are currently coming out with an American version and it is my guess that they will have some success. Their Web site is a great resource for information about tax programs, with a fantastic set of links to every conceivable tax site on the Web. You will find a few freebies there, such as a loan calculator.

At this time, there are only tax files for Alberta, Ontario and British Columbia. If you are in one of these provinces and already use one of the supported spreadsheets and want to save some serious money, this is the program for you. ❑

Contact: Tax Cruncher Software Inc., Box 1358
Station M, Calgary, Alta., Canada T2P 2L2.
Tel: 1-800 254-9426 (Accessible only in Canada) and 403-254-9426
Email: CompuServe: 74043 3527
Internet: 74043.3527@compuserve.com
Web:
http://www.lookup.com/homepages/55461/home.html

Editor's Choice Award

Like trying to pick a favorite child, this year's decision was extremely tough. It is difficult to compare different things, but in the end we chose the program we'd like to take home.

The difference between first and second was terribly small. In fact, we were tempted to award a tie for first place but decided to take the high road and make a decision.

None of the Well-established programs won our Editor's Choice Award. A few of these programs may not grace these pages again, and it is unlikely that any newcomer can easily enter the field when the leaders are so far in front. So expect to see a smaller group of players in the future, unless and until the Internet makes its presence more strongly felt.

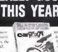
Neither of the Whiz Kids products received our Editor's Award this year, but theirs is a young technology. Look to see more of them on the horizon.

All of the Big Boys are fully capable programs but two stood out above the others — Brian Costello's HomeTax and Intuit's QuickTax.

Of these, HomeTax has the better interface but QuickTax has the richer feature set. HomeTax wins on its pre-filing version price but QuickTax wins on its regular price.

It was close but we give the Editor's Choice Award for 1995 Personal Tax Software to Intuit's QuickTax. ❑

SURE YOU CAN USE SOME OTHER TAX SOFTWARE; WE HEAR REVENUE CANADA'S IN A REALLY GOOD MOOD THIS YEAR.



Canada's tax professionals know that Revenue Canada is not always in the best of moods. That's why the majority of them use CANTAX technology to file tax returns. Twelve years of experience has taught them there is no more complete, more accurate method.

However, if you choose not to file with a professional, you can still put CANTAX technology to work on your return with CANTAX T1. Programmed and supported by the same CANTAX professional team, it has been designed to be easy enough for someone with no tax or computer training to use. Which makes it a lot easier, faster and more reliable than doing your return by hand! Our Jump Start feature walks you through your return in simple, logical steps. And T1 automatically calculates and claims all your family's credits and deductions. Using the professionals' choice gives you one other benefit too: faster refunds. Only T1 lets you EFILE your return at any of over 5,000 EFILE sites!

So keep Revenue Canada in good spirits with your 1995 tax return; go with the professionals' choice. Look for CANTAX T1 wherever you buy software or call 1-800 265-3800. It's the professional strength software you don't have to be a professional to use.

canTax
The Choice Of The Tax Professionals

TOP FUND: A tax-season 'game' for grownups

For many of us blessed with both a PC and a game-loving youngster at home, the recent gift-giving season was a time to get back into books. The computer was otherwise occupied by small hands.

Now as repeated play dulls your child's passion for the latest sim, you can turn your attention to matters taxational and RRSP. For many, this includes considering an investment in mutual funds. Enter Top Fund, the CD-ROM.

Based on the well-received book by Duff Young and Riley Moynes, Top Fund is an annual look at the best Canadian mutual funds. It combines the qualities of a written guide with an interactive portfolio builder—along with a searchable/sortable database of 900 funds and lots of sound investment strategies.

The best part of the CD-ROM is the portfolio builder. For the investment-minded individual, the portfolio builder is actually fun! Human nature being what it is, 99 out of 100 investors would never build their portfolios as effectively with the book as they would by using the CD-ROM.

Those enamored of insiders' insights will find Duff Young's comments about funds and fund managers go a long way towards satisfying that craving for a peek behind the mists of moolah.

It isn't as spicy as Dan Dorfman, nor as witty as Louis Rukeyser, but hey, these are Canadian mutuals he is discussing.

Caveat emptor. Some of Young's comments about the potential performance of funds are time sensitive. If you purchase this CD-ROM six months after his comments were recorded, his observations may serve only to provide historical perspective.

Top Fund, the CD-ROM, is available directly from Greenpoint Software for $19.95. A floppy-disk version, lacking only the video clips and spoken commentary, is also $19.95. In retail book stores Top Fund sells as a bundle with the book included for $29.95.

— *Hari Singh Khalsa*

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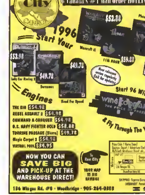

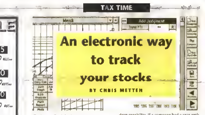

An electronic way to track your stocks

BY CHRIS METTEN

Product	Stock Analyst
Publisher	STB Investor Software Inc
System Req	386 based PC with 4MB of RAM 6MB free hard drive space Windows 3.1
Price	$249

My wife used to track the performance of stocks, making hand-written notes and tables which frequently had to be re-written and re-calculated to reflect changes. She spent many hours on manual analysis every month. While it paid off in good choices, the amount of time required was enormous.

Now, you can do a far more thorough analysis in a fraction of the time. For a modest price, STB Stock Analyst software provides a very neat system to track and compare the performance of a large number of stocks and multiple portfolios.

Stock Analyst automates the proven methods of the National Association of Investment Corporation (NAIC) which are used by 325,000 members and 17,800 local investment clubs in North America and Europe. The NAIC methods are discussed in the best-selling books *Beating the Street* by Peter Lynch (1994, Simon & Schuster) and *The Beardstown Ladies' Common Sense Investment Guide* (1994, Hyperion).

Stock Analyst organizes stock performance data into tables that provide easy comparison of companies. It automatically generates graphs (from the data) of performance with provision for projecting future performance using several different methods. This is the first Windows version of the software, and is a polished product, greatly refined from earlier DOS versions under the name SSG Combined.

Entering and editing data

Data entry screens make it easy to enter data about stocks, from such sources as newspapers, company reports, Value Line or Standard and Poor's. Fast updating of your Stock Analyst database can also be done from purchased diskettes or online services. You update the data when new figures become available and the database stores the last 10 years of data for each company. The Notes Window stores your own comments about each company.

Analysis and graphics

Analysis screens display company data in standardized table form. The software automatically makes calculations from some of the data entered and puts the results into the tables. You can plot graphs instantly from the data. You can add your own judgment and plot trends and projections, with drag and drop capability. If a company had a year with extraordinary results, you can exclude the year from the calculations. You can print reports and analyses.

Comparing stocks

The Comparison Guide Window enables you to make side-by-side comparisons of performance of up to five companies in your database. Challenge Tree compares two companies with emphasis on their future potential.

You can sort your database on 20 different criteria and view (or print) side by side comparisons of companies sharing a similar criterion.

Tracking portfolios

You can set up multiple portfolios, for cash, IRA or RRSP or for clients if you are in the investment business. A Retirement Planner Window forecasts growth of your holdings. The Cost of Switching Window analyzes the results of replacing one of your current holdings with another stock, to see whether you should come out ahead and, if so, how long after the switch that would likely take.

The communications functions enable you to download stock data and incorporate it into your database. You can update hundreds of records in a few minutes. You can also export data from your database for use by others.

Manuals and online Help

The User's Manual is concise and clearly written, with many headings, sub-headings and screen illustrations. It is thoroughly indexed to facilitate finding the answer to any question that arises with the software. The book contains a companion publication, *Investor Guide for STB Stock Analyst*, which has a wealth of advice on how to make investment choices, and adds to the value received. Online Help is accessible from the Help Menu and Technical Support is available from STB.

Summary

No software or text can make infallible stock market decisions for you, but you can now be much more methodical in your choices, without spending a great deal of time doing the analysis. The user friendly interface and powerful database, analysis and graphing features make STB Stock Analyst a must-have for anyone who seriously wants to make money on the stock market. A lot of careful thought has gone into the design of this top-notch software. ❑

Note: Not in stores, order from the publisher at 6071 Dovilen Ave. Richmond, B.C. V7C 6A2. Phone or Fax 604-272-4440. (NAIC and TD Greenline sell Stock Analyst at a discount to their members.)

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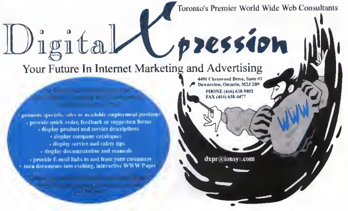

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Stupid Net tricks Part V:

Learning from other's HTML experiments

BY KEITH SCHENGILI RORERTS

You already know some HTML and have created your own Web site While surfing the Web you begin to see some interesting things appearing on other people's Web pages that you didn't think were possible As an experienced HTML author, this gets you thinking: How did they get those extra vertical spaces in there? How do you get a banner down the left side of your Web page? Hmmm This is probably worthy of further investigation After all it's always a good idea to try to keep up with the latest developments in HTML. You are also beginning to think that maybe your own Web pages will begin to look stale in comparison It's time to learn a few new HTML tricks

One of the easiest ways to learn about HTML is to read code written by other HTML authors Most browsers have a feature that lets you read and often download the HTML code from the Web page you are viewing Many people learn enough about HTML from this approach to start creating their own Web pages But once you've created your own Web page it's a good idea to keep viewing the HTML code on other people's Web pages from time to time — you might find new ways to make your own code more efficient or learn something new Many of the following HTML tricks were created by people experimenting with their HTML code or were stumbled upon by accident Either way you will find some of the following tricks useful to incorporate into your own Web pages

Adding spacing to a Web page

If you've had any experience with HTML at all you know that it is very limited in its ability to manipulate how things appear on your computer screen HTML determines the structure of a document not its layout. This can be really annoying when you are trying to get things to look exactly the way you want

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them to on your Web page

Let's say you have a lot of text on a Web page and want to separate a couple of paragraphs from each other. All you want to do is add another line. The problem is that when you put two or more paragraph (<P>) tags together, they are interpreted by your Web browser as a single tag. You can have a zillion <P> tags on a line, and it will still be interpreted as only one. So how do you get around this?

Simple. Add a break (<BR>) tag after each paragraph tag to force a new line. If you wanted two line spaces to appear on your Web page you'd enter the following code:

```
<P><BR><P><BR>
```

To add more lines, simply add more <P><BR> tags in combination. The break tag forces the browser to interpret the next paragraph tag as being on a new line, and displays it accordingly.

Whenever you type more than one space in a line, it is reduced to a single space. There's no such thing as a <tab> tag in HTML (at least not yet), so what can you do? The solution is a bit tricky, but can be done

What about horizontal spacing? Whenever you type more than one space in a line, it is reduced to a single space. There's no such thing as a <tab> tag in HTML (at least not yet), so what can you do? The solution is a bit tricky but can be done if you are willing to invest the time.

First, using a paint program, create a small blank image file of exactly the right width needed, while keeping its height under that of the default font on your browser. Then convert the blank image file into a transparent GIF file using tools like Paint Shop Pro 3.11 for Windows or Transparency 1.0 for the Mac. Insert the GIF file where needed in the line using the standard <IMG SRC="image.gif"> tag. There are some downsides to this approach. It adds to the amount of images that have to be transferred, and anybody who has turned off image transfers on their browser will see an image place-holder icon wherever you place the image in the text. This technique can also be used to set both vertical and horizontal spacing, by setting the horizontal dimension of the image file.

The side banner trick

Many spiffy looking Web pages take advantage of some of the attributes available for the <BODY> tag. Add a background graphic tiled across your page, or set the background color a user's Web browser will display when viewing your page. So what happens if you try to combine the two?

The result is an eye-catching banner that flows down the left side of the Web page comprised of the graphic which would normally be tiled across the entire page. The following example will give you a banner running down the left side, with the rest of the background pitch black.

```
<BODY BACKGROUND="sample.gif" BGCOLOR="#000000">
```

The real trick to using this combo body tag is to make sure that the underlying text is also readable. There are many sites out there that use an eye-catching side banner but you can't read text displayed on the banner, the text displayed on the rest of the background, or both. When using this tag, make sure you use the other <BODY> text extensions. For example, one readable combination would be:

```
<BODY BACKGROUND="sample.gif" LINK="3E92FF" VLINK="D60000" BGCOLOR="#000000" TEXT="FFFFFF">
```

This combination will give you black background, white text, light-blue links and red visited link. As long as the GIF file is also relatively dark, readers will be able to easily read the white text.

The amazing disappearing/reappearing text trick

No, I'm not talking about the ever-annoying <blink> tag, but another trick that uses the color-setting <BODY> tag attributes. Need to

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display some questions on a page and don't want to go to the trouble of making a separate page full of answers? Or do you want to create a page where people have to look for hidden links? The following simple, elegant and little used HTML trick works with the popular graphical browsers.

The theory is simple: make the background and the link text the same color and have the color change when a user clicks on it. The text is still displayed on the page and it still takes up room on the page but it will not appear until a user clicks on the link, thereby changing it from a link to a visited link, which is displayed using a different color. Here's some sample code you can try for yourself:

```
<BODY BGCOLOR="#FFFFFF" LINK="#FFFFFF" ALINK="#FF3300" VLINK="#FF3300">
```

In this case, BGCOLOR (background color) and LINK both have their color set to "#FFFFFF" which is the hexadecimal coding for white. It doesn't matter what color value you set, as long as both BGCOLOR and LINK are the same.

It doesn't really matter what you have in the link statement. You could simply type in a link that doesn't head anywhere, like the following:

```
<A HREF="test">You won't see this text until you click on me.</A>
```

But if you have another document on your Web server called "test," it will link to that file rather than to the hidden text. To play it safe, use the anchor name tag in conjunction with an anchored hypertext reference tag. The anchored name tag will only look for the named hypertext reference contained on that page, so the link cannot accidentally stray to another Web page. Here's an example:

```
<A NAME="TEST"></A><A HREF="#TEST">You won't see this text until you click on me.</A>
```

Note that ALINK (active link) and VLINK (visited link) are both set to "#FF3300" which produces red on most browsers. It is not necessary that you set the ALINK and VLINK to the same color, but if you do not, the color of the previously hidden text will flash from the default color value of ALINK (usually red) to the default color value of VLINK (usually blue or green) when a user clicks on it. This is not necessarily a bad thing — just a little bit disconcerting. You may not want to bother setting the colors for ALINK or VLINK if you want a hidden "Easter egg" link that transports users to a secret page. To do this all you have to do is point the hypertext reference to another Web page. The only way user's will know there is a link is when their cursor crosses over the hidden text and the link's destination is displayed by their browser. This trick is little used, but can lead to some interesting Web page designs, especially when used in conjunction with several of the other tricks previously described.

Got any interesting HTML tricks? E-mail your suggestions to kscheng@interlog.com for possible inclusion in an upcoming article. Those used will be duly credited. ❏

Web to slow in '96, followed by boom: IDC

NB — Although the World Wide Web will undergo a temporary slowdown in 1996, International Data Corp. (IDC) is "bullish" on the Internet's prospects for the next five to 10 years, predicting growth in numbers of online users to more than 200 million and in electronic commerce revenues to more than US$200 billion by the year 2000, said Frank Gens, senior VP of research, in a conference call with Newsbytes.

Gens compared the Web's outlook for 1996 to the "lag time" that set in for the PC industry during the 1982 to 1983 time frame, when the supporting infrastructure for PCs remained "weak" and some early users grew "disappointed."

Over the coming year, "Internet appliances" will hit the market for as little as $100 to $300, and full-fledged multimedia PCs will be available for under $1,000.

Online service providers will find that they must adapt to the Web or fade away, Gens added, foreseeing a rough road ahead for two of today's four major online services.

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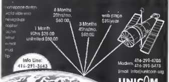
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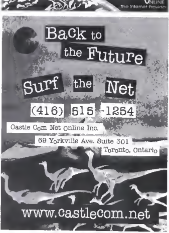
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From basement to boardroom in two years

BY JAMES MACFARLANE

Two years ago, if you weren't a university student, a researcher or a serious computer enthusiast, you probably hadn't heard of the Internet. Today it touches the lives of virtually all of us. Very rarely does a technology go from obscurity to mainstream in such a short time.

Let's take a look at how we got here from there, and at what makes the Internet so compelling.

What we now call the Internet was developed by the military as a secure communications system. It was designed to withstand a nuclear attack by finding alternate routes to a destination. Any good Internet book can give you the fine details, but that's the basic story.

Some bulletin board services (BBS) were hooked up to the Internet and provided an e-mail gateway and access to some of the thousands of Usenet newsgroups, but that was about it. The promise of things bigger and better was there, but BBSs were ill-equipped to deliver much more.

The first public Internet sites.

Almost all the computers on the Internet at that time ran an operating system called Unix. To microcomputer users, Unix was a big scary monster that ran mainframes.

In fact, Unix is a 32-bit multitasking, multi-user operating system with features making it well suited for use in wide area networks (WAN). The Internet is simply a huge WAN.

Unix later became available for personal computers. This meant that instead of running DOS or Windows 3.1 (neither of which was particularly good at multitasking), you had an operating system capable of handling anything the Internet had to offer. That was about two years ago — about the same time the first public Internet service providers (ISPs) went online.

An infant industry

Coincidentally a lot of computer people were becoming aware of the Internet. For the first time, they were able to access it for about the same price they'd pay to be a member of a BBS. There was only a handful of these sites but demand for their service grew at an astonishing rate.

The media also started to take notice of this "Internet thing" and the odd story is appeared in the mainstream media. But the Net was still the domain of computer techies, with the rest of the world on the outside looking in.

The reason the Internet didn't catch on with non-technical consumers was that users needed to know how to use Unix from the command line interface to get anything done. If you didn't have enough nerd points the Net was still too big and scary to use.

About a year and a half ago, two technologies appeared on the scene that would introduce the Internet to the rest of us — SLIP and Mosaic.

The first killer applications

Until this time, most people were using the Net in the same way they'd use a BBS. They'd run their terminal program, dial in with their modem and log onto the Unix computer and use all the applications from the command-line interface.

In other words, there were no Mac and Windows interfaces on the Net.

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Along came a tool called SLIP (serial line interface protocol) which allowed the average computer equipped with a modem to become a full-fledged Internet node

However the Net itself was still text based What the market needed was something as easy to use as a Mac or Windows PC. That something turned out to be NCSA Mosaic

The Web spins

On the back roads of the Internet a new technology was being developed around hypertext This allowed documents to be connected together using hot links So instead of simply reading an index it was live By clicking on it you could jump immediately to the selected topic

Another important feature was added. the ability to include images and layout information within a document By using a standard mark up language any computer with the right software — regardless of its operating system — could view the same document online

The standard is called HTML (hypertext mark-up language) and the method used to deliver these documents over the Net came to be known as the World Wide Web

The Web was an instant success. It brought near multimedia capabilities to the average computer user through the Net

Everyone recognized the power of the Web You could put almost any book, newspaper brochure or even advertising online Suddenly the Web became the preferred electronic publishing medium for scholars and computer enthusiasts alike

Newsletters, personal information scientific papers and even promotional information began to proliferate through the Net

The first wave of commercialization

While global e-mail was important to those in the know it was Mosaic and later Netscape that offered a salable product to consumers

The number of ISPs exploded. They were in a frantic race to purchase more equipment phone lines and bandwidth to accommodate the flood of new members to their systems

Other businesses, such as some BBS services saw what was happening and scrambled to be part of the game The media became fascinated with the Internet further propagating the desire to be wired

Media and telecom giants knew something was happening but they weren't exactly sure Out of this camp came all the meaningless "information superhighway" babble

For the next year there was a frenzy of joint ventures mergers and buyouts between cable companies telephone carriers and media giants They were covering their bases for any eventuality

Meanwhile back in cyberspace, the Internet was reportedly growing by 15 per cent per month It was the beginning of a gold rush, one that would outshine the birth of the PC in the 80s

With Net users numbering in the tens of millions, big business woke up to the fact that it was in danger of missing the boat if it didn't jump right into the "Internet thing"

Commercialization — second wave

Most ISPs were start ups that required only a few thousand dollars to go into business Last year 1995, saw the end of this

Competition and demand required bigger and better equipment higher capacities specialty software and an expanded technical support role. This was beyond the capabilities of those ISPs that wanted to continue in a cottage-industry mode

Entrepreneurs with less knowledge and more money started to come on the scene They began to give the little guys some stiff competition

Over the summer and fall of 1995 things began to settle down Most of the new players were of the "me-too" variety, bringing nothing new to the industry.

In November and December of 1995 companies like Bell Canada Unitel, Rogers Cable and Sprint began their own Internet services or swallowed up existing ones

The two-year evolution of the entire industry — from something that you could start in your basement to something in which major multinational corporations were competing — was amazing

The next generation of technology, namely cable modems could cause a shakeout in the market If you can get 500 000 bps from

Continued on page 103

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The sound of silent meetings

A Montreal business school puts electronic meetings to the test

BY ERIC BERNATCHEZ

A group of employees, directors and vice-presidents gathers around the table of a meeting room at Montreal's elite business school, the Hautes Etudes Commerciales (HEC). The chairperson knocks on the table and asks them to stop talking. Then the sound of keyboards clicking rises in intensity: this is the sound of electronic meetings.

These modern meetings cut out chat, anecdotes, interruptions, constant struggles to get the floor and never-ending or futile arguments, and let you type everything instead.

meeting time is cut by up to 50 per cent, Ideas are automatically stored on disk, and lower-level employees are able to express their views openly

As a result, meeting time is cut by up to 50 per cent, Ideas are automatically stored on disk, and lower-level employees are able to express their views openly even if they are sitting next to the president.

"Shy people express their views on an equal footing," says Moktar Outtas, who is in charge of the meeting room at HEC, one of the first of its kind in Canada. To date, many groups have used the concept, including Hydro-Quebec, the City of Montreal and IBM Montreal.

It looks like an ordinary meeting room except for the keyboard drawers in front of each participant, and the monitors installed under the glass tabletop so they don't block the participants' views.

The computers are linked to each other and a software package called Group Decision System takes care of managing and organizing the information hierarchically.

"One of the great advantages of this technique is that people do not need to take turns speaking," Outtas explains. "Everybody can "talk" at the same time and so ideas are generated faster.

All ideas considered inappropriate or out of context by the meeting chairperson are discarded, so time is not lost discussing them," Outtas says.

Last year, Michel Vincent, director of technical support at Montreal's housing development corporation, arranged electronic meetings for the city agency.

"We put together janitors and directors to discuss quality issues. After one electronic meeting, I am sure we did as much work as we would have in two or three traditional meetings," he says. "You can determine in advance how much time you will spend on each question by allotting 20 minutes on this, 45 minutes on that, and so on."

As the meeting proceeds, the chairperson — also called a facilitator — uses the network to bounce back some of the ideas he or she has received, allowing others to comment on them immediately, just as in any other meeting. Periods of normal discussion usually follow each electronic brainstorming session.

Most of these meetings end with a vote, which is, of course, anonymous. And participants can engage in what's known as conditional voting, which means they can say, for example, "I am in favor of a suspension bridge only if traffic is limited to 1 000 cars per minute."

Since users type everything directly into a computer, every piece of data, every vote,

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every idea is stored and can be backed up

"This is particularly useful in engineers meetings where every detail is important," Outtas says. "For example the security features of the new Boeing 777 were discussed through electronic meetings so that if someone says 'We should not forget to check the screws,' for example, you are sure that it will not be lost."

Another advantage of electronic meeting rooms is that despite the technology they are quite cheap to build — the only cost is the computers, which can be obsolete models, and a simple network server.

But are there any down sides?

"I see maybe one problem," says Vincent. "Not everyone types at the same speed and some participants cannot comment as much as the others.

"Also it is quite relative to say that comments are anonymous," he adds. "If there is a well known union representative in the room, it is likely that you will recognize his traditional demands."

To people who have used the IRC chat channels on the Net, electronic meetings may sound familiar since we are talking about the same thing: all participants writing comments at the same time and keeping a log of the conversation.

As that kind of meeting gains in popularity the next step may be remote electronic meetings to help companies save on the costs of video conferencing. Just paste pictures of the other participants beside your monitor and you're ready to roll. ❑

Basement to boardroom

Continued from page **101**

your cable company for under $50 a month, why bother with your neighborhood ISP or telephone company, which are still modem-based and offer nothing faster that 28,800 bps?

Another concern: What is the role for the people who founded and fostered the industry now that cable modems and satellite technology are going to short circuit them right out of the market?

Why did this all happen?

The allure of the Internet comes from many places. First, people have the need to communicate with each other in their community. That community is now global, so we need global communications. Culture now extends well beyond geographical borders, and the Internet allows people to maintain a globally distributed culture.

Another important factor is the desire for knowledge. It is more efficient to find information online where search engines can locate almost anything in matter of seconds. While libraries may still be important, many people are making the Web their resource of choice when looking for information.

Knowledge is also stored in people. The 400+ megabytes of data passing through the thousands of Usenet newsgroups every day contains the collective conversations of hundreds of thousands of people. Ask the right question in the right place and chances are you'll get an answer — usually a good one.

For commerce, the Internet provides instant globalization. A friend manufactures and sells Canadian products to the world through his Web site. He can access customers in countries where economies are expanding and people are spending money. His Web site is open 24 hours a day and is virtually unmanned — an effective and efficient business tool.

The most important attraction of the Net is the freedom — to talk about what you want and to publish what you want. You don't need a printing press or even a photocopier. It is the most inexpensive method to publish information — any information.

The Internet knows no discrimination. You can be of any race, color or religion and you will only be judged by your words and thoughts. You can type with a stick strapped to your forehead or by blinking an eye.

The Internet has exploded into a communications revolution that will prove to be more powerful that print, broadcast and telephones combined.

Not bad for something that was virtually unknown two years ago.

What path will the Net take next? Will each individual become a broadcaster as well as a publisher? When the cost of developing and distributing a TV show is as cheap as publishing a newsletter what will happen to television? What will happen to mass media, and of course, mass culture itself?

We are on the brink of a very big change — industrially and culturally. While we may be able to see the technology that's coming down the pipe, we can't possibly predict how it will change society. ❑

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Power Plus in a 133 MHz Pentium

BY JEFF EVANS

With the Pentium Pro now available in stores, is there still life in the 'lowly' Pentium? We think so.

Change is so untidy. We were planning to do another "Power Users PC" survey at *The Computer Paper* Test Labs around this time but we realized two things that have made us reconsider our timetable.

1) High-end Pentium systems are really not state-of the art these days, following on the release of the Pentium Pro chip.

2) Pentium Pro based systems, though shipping in small numbers, are not yet common on the Canadian retail scene. We're in an interim period. So, as an interim measure, we include this snapshot of last month's state of the art: a PC model we found extremely impressive in terms of price and performance and more affordable than the forthcoming Pentium Pro models, which initially at least will command a premium of around $1,000 more than the class of machine described below.

The Power Plus P133: Out of the Box

The P133 mini-tower configuration we received — from Toronto PC maker Ultinet — was based on the TRITON chipset motherboard, a Pentium 133 MHz processor, with 16 MB of EDO RAM, and 256K asynchronous pipeline cache.

It has three PCI slots and four ISA slots, a 1.6-gigabyte nine-ms enhanced IDE hard drive (with performance boosted with an exclusive enhanced IDE-booster driver), a 6x CD-ROM drive, 16-bit sound, Matrox Millennium 2MB WRAM video card, speakers, CD ROM bundle, and MS DOS and Windows 3.11 preinstalled. A mouse, two high speed serial ports, one enhanced parallel port, one game port, and an infrared communications port were also included.

The price, including a MAG 17-inch DXF monitor and two-year parts and labor warranty on the system (a five year warranty on the motherboard) is $4,449. This is a good deal more expensive than the average home PC system, but the components are all uniformly first rate, and this is one of the few PCs I've used for demanding applications like Corel Draw and Ventura that works as fast as I can think. Or, to put it simply, there is rarely any perceptible waiting time for hard-drive access.

Continued on page 111

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Title Confused? A Kid's Guide to the Internet's World Wide Web
Author Luc F Theriault
Publisher Farfan Internet Publishing
Price $12 95
ISBN 1 896975-00X
Softcover 94 pages 1995

Guiding kids through the Net

BY KEITH SCHENGILI-ROBERTS

There's a lot of educational potential out there on the Internet. There are virtual museums and art galleries, access to most of the world's great literary classics and vast reserves of scattered miscellaneous information. But if you've spent anytime surfing the Web at all you also know there are some things you might not want your kids to see. The Internet (or its successor) will be a part of your child's future and you want to let them get the most out of it but how? Maybe this little book is what you need.

Aimed at children between the ages of six and 13 *Confused? A Kid's Guide to the Internet's World Wide Web* was written by Luc Theriault, a "crazy cheese loving media type with a twist" whose loopy characters led to the creation of the alt.fun.with.luc Usenet newsgroup. His book helps both children and parents understand the workings of the Internet and the World Wide Web with the aim of finding fun and interesting sites for children to play with while sneaking in some education at the same time.

The first section of the book tells parents what the Internet is, what is on it and how they can help guide their children in their use of it. Kids are then given some "street-proofing" lessons about the information highway, such as not giving their name to strangers and generally being careful when dealing with adults. Then the fun stuff begins. Any kid researching a school project will be able to find interesting sites where they can write to astronauts, learn about people from around the world or learn all about volcanoes.

There are also plenty of great diversions including fairy tales, playing games, finding out what your name would be in Hawaiian, or rearranging the facial characteristics of Mr. Edible Starchy Tuber Head. Kids and parents together will get a lot out of the sites contained within this book.

This book is from a small press, and looks like it. It is brief, and any adult will be able to read the whole thing in under half an hour.

The only real criticism of this book is that there's not enough of it. It is only a matter of time before other professional publishing houses pounce on the idea and give it the sort of breadth of coverage it is due. In the meantime, *Confused?* will help a lot of kids — and their parents — discover that there's plenty of "neato stuff" on the Net ❑

RATING
Information content: ****
Readability: *****
Intended for: Beginner
Overall Rating: ****

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The Art of Ware

Classic strategies for the computer industry

BY KEITH SCHENGILI-ROBERTS

The Art of Ware Sun Tzu's Classic Work Reinterpreted

Author	Bruce F Webster
Publisher	M&T Books
Price	$30 00
ISBN	1-55851-396-5

Softcover 168 pages 1995

Ever feel like the computer business is a battleground? This is a metaphor many people in the industry are familiar with — the battlegrounds of the international computer marketplace are littered with many vanquished and insolvent firms defeated in the never-ending struggle to scale to the top of the marketplace and stay there. There can't be a manager at any computer firm who hasn't used military speak when talking about "conquering the competition" or "dominating the marketplace."

Twenty-five centuries ago the Chinese general Sun Tzu wrote a masterful book on military strategy called *The Art of War*. Sun Tzu's ideas have influenced many strategists over time, and have enjoyed a recent vogue among corporate managers. Author Bruce Webster has updated the book for computer industry managers. While there is some question of whether or not a classic like *The Art of War* needs updating, Webster's *The Art of Ware* provides sound strategies for success in the computer industry.

Appear tentative at first, so that the competition will underestimate you: then move rapidly and surely so that they cannot keep up with you.

Webster has worked in the computer business for over 20 years and is a contributor to such magazines as *Macworld* and *BYTE*. He has the experience to write extensively on the many management-level struggles within companies, and the battles they wage against other firms.

The original book used short, *koan*-like phrases that neatly summed up particular military ploys. The famous maxim "All warfare is based on deception" is classic Sun Tzu. The phrases are meant to be digested slowly and thoughtfully, so the reader can learn the different manners and situations in which the maxims can be applied in battle. Webster adds extensive commentary to his re-interpretation, to drive his points home. In many cases this is unnecessary, but the commentary typically includes illustrative summaries explaining how a particular strategy was used successfully within the industry.

Mirroring the original, *The Art of Ware* begins by looking at the ways you need to consider your corporate plans and build and support your product before launching it into the marketplace. It also tells you how to evaluate your competition, what actions you should take when you are threatened, and how to stay at the top when you get there. Along the way it teaches sound micro- and macro-management techniques.

While Sun Tzu has been dead for over two millennia, this book proves that his work is relevant today. The original *Art of War* is still recommended over this book, but its re-interpretation in Webster's *Art of Ware* is a good, pointed reminder to managers working within the computer industry ❑

RATING
Information content ***
Readability ****
Intended for Intermediate/Expert
Overall Rating ***

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Windows 95 keyboard shortcuts

Breaking the cycle of mouse dependency

BY ROD LAMIRAND

One of the ways you can spot a power user is by how well he or she can get around the computer Nothing separates the real computer user from the armchair technophile more clearly than agility with the interface

A novice or intermediate user will freeze, eyes wide in appreciation at the skill a keyboard jockey demonstrates in cutting, moving and jumping from application to application. Windows litter the desktop apps minimize tile or close — a quick paste a download notes to the personal information manager (PIM) and all with the press of a few well-chosen keys

Keyboard shortcuts place you on the next level of computing

Don t get me wrong — the mouse is a wonderful thing The world has chosen the graphical user interface and in that world, the mouse is at the heart of the system The mouse is our friend! Until the vocal user interface and the 40-inch touch screen come into our lives, the mouse and its inverted cousin the track ball are here to stay

However over reliance on the mouse is the sign of the novice user Here then, are a few of the hundreds of keyboard combinations for Windows 95 and a few for the most popular Win95 applications

The very basics: (Ctrl+C — Copy, Ctrl+V — Paste, Ctrl+X — Cut and Ctrl+Z — Undo)

Let s look at a very common example You are writing a letter in your word processor and you want to get an address from your PIM to place at the top of the letter

If you are a novice you will probably grab your mouse, bring it down to the Task Bar click on Start and wind your way up and along Programs PIM Folder PIM and click to launch the application

Now that the PIM is open you select the data choose Edit/Copy go to the Task Bar and return to your word processor click on the document and select Edit/Paste.

All of the time your right hand is dragging the mouse about your left hand is doing nothing (assuming you re right-handed) This procedure could be greatly speeded up by the following

After you ve selected the text to be copied by highlighting it with the mouse hit the Control (Ctrl) key and while it is still depressed hit the C key You ve just copied the data that was highlighted.

Now get back into your word processor place the cursor at the position you want the data inserted Now hit Ctrl+V and you ve pasted the data you previously copied

Equally useful are Ctrl+X and Ctrl+Z. Ctrl+X means cut. This is an effective way to get rid of something but it is easier to hit the delete key if you only want something gone The value of Ctrl+X is that it deletes the object but also copies it. Now you can click on another point in a document or spreadsheet and use your friend Ctrl+V to paste what was cut into a new location.

It s true that your word processor may allow you to simply drag and drop selected text to a new location but Ctrl+X works throughout Windows 95 and all its applications so it is a useful keyboard combo

Ctrl+Z is simply the same as going to the menu and clicking Edit and then Undo However it is much quicker and will work in many different situations.

These four keyboard shortcuts are almost universal For example they can be used to copy and paste files and folders Throughout Windows 95 and its applications standard in Window 3 x and common to Macs these four are a first step to real productivity

The power user: Alt Tab, the Control key (Explorer and Word) and custom keyboard shortcuts

Now let s say you are in your word processor and want to copy a sentence to a memo page in your PIM Hold down the Ctrl key and double-click with the mouse anywhere in the sentence That sentence is highlighted Ctrl+C copies the sentence

Now hit Ctrl F11 and the PIM starts Click to where you want the sentence placed and use Ctrl+V to paste it Alt/Tab back to the word processor and you're done Let s go over what just happened

The Control key

The Control key is a toggle for almost every

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thing. In this case the word processor was designed so that double-clicking while the Ctrl key was depressed highlighted a whole sentence. This word processor was Microsoft Word but using the Ctrl key as a toggle is common to all Windows programs. For example Ctrl F4 closes a window, and in the Explorer using the Ctrl key when you are dragging a file changes a Move to a Copy. Like the open Apple key on Macs the Ctrl key will often alter a mouse action. In the Macintosh OS, Windows 3.x, and Win95, the Ctrl and Shift keys allow for group or individual selection of objects (files icons documents)

Alt Tab

Holding down the Alt key and tapping the Tab key to cycle through open programs first became widespread in Win 3.1. It was so popular because 3.1 didn't have a task bar, thus without Alt Tabbing, the user would have been forced to minimize and seek.

Now that Win 95 has the Task Bar some might wonder why people need to Alt-Tab. Once again it comes down to the speed of the keyboard over the mouse. If you're not used to Alt-Tab, give it a try

Custom shortcuts.

New to Windows is the ability to easily create a keyboard shortcut to run an application. On my machine I have my organizer, my word processor and my Internet software all set for keyboard shortcuts

You might ask why? The answer is this: If I am in a program and I want to start my personal organizer I am stuck with limited choices. The first is running my programs at less than maximum so that I can still see desktop, and then clicking on the desktop and finding the organizer icon

Or, equally as bad, I could choose Start and following the snakes and ladders to the program. (It is easy to place any program just above the Start button by dropping it on the Start button, but this is still not as fast as a keyboard shortcut.)

The final choice is to right-click on any part of the Task Bar that doesn't have an application button (sometimes easier said then done) and choose Minimize All Windows. How much quicker and better just to hit Ctrl and another key and it's done

Here's how. First, create a Desktop shortcut. Right-click on the Desktop. Choose New/Shortcut, fill in the Command Line with the path to the program or click Browse and find the executable. When you've got a working Desktop shortcut right-click it and choose Properties. The index-card style tabs at the top should read General and Shortcut — choose Shortcut

Click in the space beside the words "Shortcut key," press the Ctrl key and another key of your choice, such as one of the Function keys. Don't pick the lower Function keys such as F1 or F2 as some applications use these keys. Click OK and you're done

These are but a few of the hundreds of shortcuts available in Windows 95. A very short list of some of the basic commands can be found in the Windows Help file — press F1 select Index and type "keyboard." Look under the subheading "Function keys" for a bit more information

A more detailed explanation can also be found on disc if you have the CD version of the Windows 95. ❑

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Getting real people involved in the computer design process

BY ROSS MACDONALD

Despite what you may have heard, thought or suspected, there's a little bit of protoplasm in every computer you see. Ergonomics — the science of designing things to best accommodate various bits and pieces of the human body — is all the buzz in the computer industry these days as the computer itself gradually mutates from a business-cum-nerd machine into a household appliance as common as the VCR.

We're primarily concerned with making our products useful and usable [and] we try to understand how people interact with computers.

— Tim Dammon, Compaq

Less buzzy but more accurate than "ergonomics," perhaps, is the term "human factors," which roughly translates into usability. And it's in places called "human-factors laboratories" that the major computer makers focus their efforts toward making their machines physically friendlier. Virtually all major manufacturers have such facilities, but Compaq's is one of the most elaborate.

Tucked into a fifth floor suite over a bank in Houston, Tex., you'll find the greater part of a compact car and the lesser parts of "steerage-class" airliner seats. Poking your nose through other doors leads to a restaurant scene, a living room setting and an office.

All of these installations help Compaq's design team predict just how "usable" any new ideas and designs might be.

Can a new portable be used comfortably in the back seat of a car? Can you read the screen in bright daylight? Is the pointing device in a comfortable place? And how about those airplane seats? Does the screen swing to a comfortable angle? Is the carrying case too clumsy to open in such a tight space?

Contextual labs

Compaq started its human factors lab in 1989, relatively early compared to other PC makers. The planes and cars and living rooms, however, are the "contextual labs" and they're relatively new — installed only last year.

Compaq's human factors department employs 12 people, most of whom have master's degrees or doctorates in experimental psychology or industrial engineering.

"Our goal as human-factors professionals is really to tie the marketing and engineering people to the actual computer users," says Tim Dammon, team leader for Compaq's human-factors lab for desktop and portable computers.

"We're primarily concerned with making our products useful and usable [and] we try to understand how people interact with computers."

Dammon says experiments in a "sterile" lab allow researchers to isolate tasks and be very specific about what is studied and measured. The problem is, most people don't use computers under lab conditions.

An alternative is to go out into the real world and observe people performing their real tasks.

"However," Dammon laments, "going out into the real world is expensive and time consuming."

Compaq's compromise was the contextual lab — a facsimile of the real world. Although data gleaned from the labs is subjective, Dammon says it still offers valuable insights.

"Even subjective data can be quantified on a ratings scale that we've developed over a period of time," he says.

"And we're also looking at things like task time — how long it takes people to perform a given task — or time and error, in which we define what exactly 'error' will be ... like taking too many steps to achieve a certain goal, for example, or wandering around in the wrong area of a particular software interface when trying to figure out how to do something. We understand that there's going to be some error of that sort anyway, but we're looking for ways to minimize it as much as possible."

The psychological experts are key to designing the human factors studies. An experimental psychology background is required to determine the validity of the data they're compiling. Ensuring the experiments are solidly founded with proper controls is a complex process.

"For example," Dammon explains, "some of our studies may involve looking at target size on the computer screen — what's the appropriate size to make a particular object on the screen, given that you might be sitting in a living room environment with other things competing for your attention.

"We know there are some principles of human attention and perception from the

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psychology literature and we take those principles as a starting point."

Participatory design

The Compaq lab also experiments in "participatory design."

In designing new hardware, for example, lab participants are given modeling clay or styrofoam mock ups of various pieces and are asked to create their own buttons, pointing devices, keyboards, etc. After observing a number of subjects doing these tasks, the researchers analyze the results. They look for central themes to help refine a prototype which is then used to design new equipment.

Studying the new product in the real world, after it has been shipped, is the final stage of the research.

Tabworks overlay interface and the Activity Manager shell interface, which is now shipping on the most recent Presario computers, are two products designed with the help of Compaq's participatory-design lab.

"The Activity Manager is a sort of a task bridge for users. What we were finding is that most novice users don't understand what an application is or even how to open an application. What they showed us they want to do is a task — maybe write a letter, or send a fax, or make a call on the built in speaker phone," Dammon explains.

> **But what I see happening more and more is that human-factors [research] is moving further and further upstream in the design process to become more of an idea generator than an idea-refinement process**
>
> **— Tim Dammon**

Users who may not understand Microsoft Word or Works can use the Activity Manager to simply select various tasks such as writing a letter, sending a fax, or balancing a chequebook.

Dammon says Compaq is not heading into software development in a big way. Products like Activity Manager are designed to make the company's hardware more user friendly.

"We're simply trying to ensure that the folks who buy our computers are fully empowered to use them to the best of their ability... and ours too."

Seeking subjects

Participants for the Compaq studies are recruited from various areas, based on the aspect of design being researched.

Secretaries, for example, are hired from employment agencies for keyboard-intensive activities. While absolute novices might be brought in for a look at pointing devices or even out-of the box set up logistics.

Subject requirements for any given study are extremely well defined, which means some categories of participants are easier to find than others.

When asked about why the cosmetics of computer equipment seem to be the bastard child of computer design, Dammon predicts that appearance will become more important in the near future.

"As the computer becomes more of a true consumer-electronics product, we'll be looking at better integrating it into the home so ➤

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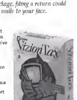

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Human Factor

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that people are more comfortable with it.

"Human factors in the computer industry have historically had more of a role in refining ideas and designs coming out of the engineering departments," Dammon says.

"But what I see happening more and more is that human-factors [research] is moving further and further upstream in the design process to become more of an idea generator than an idea refinement process.

"But you have to keep in mind that there are three components involved in building good products. First, there's the usability and usefulness — which I think is the strongest component, but there's also the marketing component and engineering considerations too.

"Some of the things I'd like to see us do are just not doable today. So we realize that human factors is just one part of a three-prong process. There have often been times we've gone in with an idea or a recommendation but because of marketing constraints or engineering constraints, they just aren't done. But that's OK too."

It sounds like Dammon won't fear for his job anytime soon.

"Developing computers for people is a growing process. Whenever we fix one problem, it seems like there's always something else that pops up," he says. ❑

133 MHz Pentium

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or screen refreshes. Even when multitasking, individual applications seem to work without noticeable lags.

We ran the Power Plus P133 side by side with a 486 DX2/66 Mhz with 8 MB RAM and PCI bus and found that at every step, performance was radically better, often by a factor of five or six. When printing out complex files from a Hewlett Packard LaserJet 5, for example, the extra 8 MB of RAM on the P133 speeded up printing by a factor of three.

The 6x CD meant that when loading Corel PhotoCD images into Corel Paint, the load time for VGA-resolution pictures was less than a second. The Matrox Millennium card ran interactive CD ROM titles with full-motion video clips smoothly, without lags or delays, and with the sound properly synchronized with the video.

The Best Buys Of 1996

While the machine we tested was an Ultinet brand, many other Canadian PC vendors, such as Comtex, IPC, Patriot, Sirus, Express Micro, Samtack/Pine, Seanix and others, also offer high-end Pentium systems with similar features.

Where these systems were formerly restricted to those with a big budget, we can look forward to Pentium based systems steadily decreasing in price as the pace of Pentium Pro chips entering the market picks up. As well, it seems likely that the price of many components, such as hard drives, CD ROM drives, and previous seasons' models of graphics cards and monitors will continue to drop.

This means that while the Pentium Pro-based systems may command a lot of computer press attention in 1996, last year's dream machines will quietly be coming within the ordinary PC user's reach. ❑

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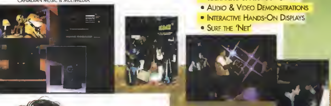

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SASKATOON COMPUTER EXPO February 8-9, 1996. Saskatoon, SK. For more information call Brent Aubestin at Peal Reality Inc (204) 982-2696

COMPUTER FESTIVAL FEST February 15-18, 1996. Toronto, ON. For more information contact Ryhan Ahmad at ShowReal Productions (416) 925-4633

MICROSOFT ACCESS & DEVELOPER'S CONFERENCE. February 19-20, Prince Hotel, Toronto, ON. For more information call 1-800-265-1362

MARCH

EXECUTIVE SHOWCASE ON OPEN CLIENT/SERVER COMPUTING. March 4-6, 1996. Toronto, ON. For more information contact Sean Wainwright, Plesman Expositions at (416) 497-9562 ext 271

THE CANADIAN MUSIC & MULTIMEDIA SHOW '96. Metro Toronto Convention Centre, Toronto, ON. For more information contact Neil Dixon at (416) 696-9230

COMPUTER FEST March 15-17, 1996 Vancouver, BC. For more information contact George Becker at Alba Computer (905) 477-1981

MICRO EXPO MONTREAL. March 22-24, 1996. For more information contact Claude Thibault at Groupe Expotor Inc. (514) 344-0602

ONTARIO COMPUTER FAIR. March 24, 1996. Windsor, ON. For more information contact Jim Creighton at Creighton & Associates 1-800-465-8286.

TRAVEL TECHNOLOGY '96. March 26-27, 1996. Toronto, ON. For more information contact Alan Crockford at Baxter Travel Group (416) 869-7252.

SOUTHWESTERN ONTARIO OFFICE & TECHNOLOGY EXPO. March 27-30, 1996 at the Western Fairgrounds, London, ON. For more information contact LCE during regular business hours at 1-800-265-7891

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ONTARIO COMPUTER FAIR. March 31, 1996 Whitby, ON. For more information contact Jim Creighton at Creighton & Associates 1-800-465-8286

INTERNATIONAL

UNIFORUM '96 February 12-16, 1996 San Francisco, CA. For more information contact Ted Pozzie at Softbank Comdex (617) 433-1664

ENTERPRISE COMPUTING SOLUTIONS. February 13-16, 1996 San Francisco, CA. For more information contact Marc Kofov at Softbank Comdex (617) 433-1005.

NEW MEDIA EXPO. February 27-28, 1996. Los Angeles, CA. For more information call 415-283-3334

COMDEX/COMEXPO MEXICO '96 WINDOWS WORLD/MEXICO '96 February 27-March 1, 1996. Mexico City, MX. For more information contact George Fournier at Softbank Comdex (617) 433-1822

CEBIT '96 HANNOVER. March 14-21, 1996. Hannover, Germany. 9-6pm daily. 5,857 exhibitors from 59 countries including 63 from Canada. Hannover Fairgrounds, Germany. For more information call Co-Mar Management Services (416) 364-5352 or 1-800-727-4183

COMDEX/Sucesu-RIO '96. April 23-26, 1996. Rio de Janeiro, Brazil. For more information contact George Fournier at Softbank Comdex (617) 433-1822

COMDEX/UK '96 April 23-26, 1996. London, England. For more information contact Nancy Lowd at Softbank Comdex (617) 433-1804

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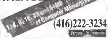

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1996 CANADIAN TECHNOLOGY SHOWS

Legend: * 8 1/2'x2 1/2' Table ** 4x2 1/2' Table **** 4x8' Table

Show	City	Dates	Previous Attendance	Booth Price 10X10	Show Management	Contact	Telephone
Dealer-Fest 96 Computer Dealer Show	Montreal	Jan 11/96	600	$690	Groupe Expocor Inc	Claude Thibault	(514) 844 0592
COMDEX/Pacific	Vancouver	Jan 16-18/96	27,000	$2,900	Softbank Comdex	Adam Torres	(617) 433 1917
Atlantic Internet Open House & Computer Show	Halifax	Jan 19-21/96	3,500	$450	The Internet Coffee Club	Bernell James	(902) 423-3161
Ottawa Computer Show & Sale	Ottawa	Jan 25-28/96	10,000	$1 200	Groupe Expocor Inc	George Bachir	(905)477 1931
Saskatoon Computer Expo	Saskatoon	Feb 8-9/96	Unavailable	$4 per sq ft	Port Reality Inc	Brent Aubertin	(204) 992 2606
Computer Fest/Net Fest	Toronto	Feb 15-18/96	32,000	$1 100	ShowFest Productions	Ryhan Ahmed	(416) 925-4533
Computer Fair	Burnaby	Feb 17/96	Unavailable	Price on request		Patrick Daley	(604) 275-4691
Microsoft Access/Office Developer's Conference	Toronto	Feb 19-21/96	Unavailable	Price on Request	Fenteach Inc	Val Mattson	1 800 265-2262
Government and Technology Show	Halifax	Feb 20-21/96	Unavailable	Price on Request	Marage Technologies		(418) 649-0484
SIAD	Quebec City	Feb 28-Mar 1/96	7,000	$1 700	Martin International	Serge Martin	(514) 288 3931
UDEX 96	Ottawa	Mar 3/96	1,000	Price on Request	Indy Systems	Lafrance Li	(613) 744-0307 ext 250
Executive Showcase on Open Client/Server Computing	Toronto	Mar 4-8/96	1,000	Price on Request	Plenum Expositions	Sean Wainwright	(416) 497 9562 ext 371
Computer Technologies '96	Edmonton	Mar 20-21/96	First Time	Price on Request	NAIT	Perry Woods	(403) 471 7515
Micro Expo 96	Montreal	Mar 22-24/96	20,000	800	Groupe Expocor Inc.	Claude Thibault	(514) 844 0592
Ontario Computer Fair	Windsor	Mar 24/96 Nov 3/96	1,500	$150*	Creighton & Associates	Jim Creighton	1-800-465-8280
Travel Technology 96	Toronto	Mar 26-27/96	1,200	$1 596	Baxter Travel Group	Alan G. Cruickshank	(416) 968-7252
Ontario Computer Fest	Whitby	Mar 31/96 Oct 20/96	3,000	$150*	Creighton & Associates	Jim Creighton	1-800-465-8286
Home Office Show	Toronto	Apr 2-3/96	12,000	$1 500	Corporate Events Management	Joseph Pooks	1-800-661-7083
NetCom Caravan '96	Montreal	Apr 10/96	1,000	$2 200	Plenum Expositions	Sean Wainwright	(416) 497 9562 ext 371
Software & Client/Server World	Toronto	Apr 10-12/96	11,000	$2 030	DCI	Nancy Gorgone	(508) 470-3870
NetCom Caravan 96	Ottawa	Apr 11/96	1,000	$2 200	Plenum Expositions	Sean Wainwright	(416)-497 9562 ext 371
Winnipeg Computer Expo '96	Winnipeg	Apr 12-13/96	9,000	$6 per sq ft	Fox Reality Inc	Brent Aubertin	(204) 992 2606
Ontario Computer Fair	London	Apr 14/96, Sep 15/96	1,500	$150*	Creighton & Associates	Jim Creighton	1-800-465-8286
NetCom Caravan 96	Calgary	Apr 15/96	1,000	$2 200	Plenum Expositions	Sean Wainwright	(416) 497 9562 ext 371
NetCom Caravan 96	Vancouver	Apr 18/96	1,000	$2 200	Plenum Expositions	Sean Wainwright	(416) 497-9562 ext 371
Computer Fest/Net Fest	Mississauga	Apr 19-21/96	20,000	$990	ShowFest Productions	Ryhan Ahmed	(416) 925-4533
The Canadian Home & Multimedia Show 96	Toronto	May 8-10/96	5,000	$1 185	Chart Toppers	Neill Dixon	(416) 695-9236
Ontario Computer Fair	Kitchener	Apr 21/96, Sep 29/96	2,000	$150*	Creighton & Associates	Ian Creighton	1-800-465-8286
Computer Fest	Vancouver	Apr 26-28/96	10,000	$495	Abba Computer	Bill Taylor	(604) 436 1122
Ontario Computer Fair	Ottawa	Apr 27-28/96 Oct 5-6/96	4,000	$250***	Creighton & Associates	Ian Creighton	1-800-465-8286
NetCom Caravan '96	Toronto	Apr 30/96	Unavailable	Price on Request	Plenum Expositions	Sean Wainwright	(416) 497 9562 ext 371
Ontario Computer Fest	Burlington	May 5/96, Sep 8/96	1,500	$150*	Creighton & Associates	Jim Creighton	1-800-465-8286
Fusion Conference	Toronto	May 5-7/96	Call	Call	Fenteach Inc.	Val Mattson	1-800-265-2262
COMTECH 96	Ottawa	May 7-8/96	14,025	$2 200	Connolly Exhibitions Inc	Brennan Sousa	(613) 738 9850
PC EXPO 96	Montreal	May 8-10/96	22,000	$990	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Atlantic Info Route 96	Moncton	May 16-18/96	Unavailable	Price on Request	Marage Technologies		(418) 649-0484
Saskatoon Computer Expo	Saskatoon	May 23-24/96	Unavailable	Price on Request	Fox Reality	Brent Aubertin	(204) 992 2606
MULTIMEDIA 96	Toronto	May 23-25/96	10,000	Price on Request	Multimedia Tradeshows Inc.	Susan Muir	(905) 660-2491
Computer Fair	Burnaby	June 1/96	Unavailable	Price on Request		Patrick Daley	(604) 275 4691
CD ROM Festival 96	Edmonton	Jun 28-30/96	First Time	$950 for 20x20	NAIT/Multimedia Applications	Vernon Sommers	(403) 421-7622
LAN EXPO 96 at COMDEX/Canada	Toronto	Jul 10-12/96	50,000	$30.95 per sq ft	Softbank Comdex	Adam Torres	(617) 433-1907
WINDOWS WORLD 96 at COMDEX/Canada '96	Toronto	Jul 10-12/96	50,000	$30.95 per sq ft	Softbank Comdex	Robert Berkowitz	(617) 433-1000
COMDEX/Canada '96	Toronto	Jul 10-12/96	50,000	$30.95 per sq ft	Softbank Comdex	Adam Torres	(617) 433-1907
Rendez-vous 96 Tradeshow	Toronto	Aug /96	800	$690	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Rendez-vous 96 Tradeshow	Ottawa	Aug/96	800	$690	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Rendez Vous '96 Computer Dealer Show	Montreal	Sep /96	800	$690	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Atlantic Canada Business Computer Show	Halifax	Sep 10-11/96	7,000	$1,500	Groupe Expocor Inc	Carol Smith	(416) 252 7791
NetCon 96	Toronto	Sep 11-13/96	2,500	$26 per sq ft	Plenum Expositions	Sean Wainwright	(416) 497 9562 ext 371
G-TEC (Government Technology Exhibition)	Ottawa	Sep 17-19/96	7,673	$2,000	Connolly Exhibitions Inc	Brennan Sousa	(613) 738 9850
The Canadian High Technology Show	Toronto	Sep 17-19/96	5,000	$25 per sq ft	Reed Exhibitions Companies Inc.	Peter Gamman	(416) 491-7565
Computer Fair	Burnaby	Sep 21/96	Unavailable	Price on Request		Patrick Daley	(604) 275-4691
Computer Fest/Net Fest	Toronto	Sep 26-29/96	28,000	$9,100	ShowFest Productions	Ryhan Ahmed	(416) 925-4533
Calgary Computer Expo	Calgary	Oct/96	Unavailable	$6 per sq ft	Port Reality Inc	Brent Aubertin	(204) 992 2606
Edmonton Computer Expo	Edmonton	Oct/96	Unavailable	$6 per sq ft	Port Reality Inc	Brent Aubertin	(204) 992 2606
First Warehousing Conference	Toronto	Oct 1-3/96	1,200	$2,830	DCI	Nancy Gorgone	(508) 470-3870
Regina Computer Expo	Regina	Oct 7-8/96	Unavailable	$4 per sq ft	Port Reality Inc	Brent Aubertin	(204) 992 2606
Canadian Multimedia Conference '96	Edmonton	Oct 7-15/96	2,500	Price on Request	NAIT/Multimedia Applications	Vernon Sommers	(403) 421 7622
COMDEX/SCIB	Montreal	Oct 8-15/96	First Time	$29 per sq ft	Softbank Comdex	Adam Torres	(617) 433-1907
Biola	Vancouver	Oct 16-17/96	7,044	$1 190	Groupe Expocor Inc	Bill Taylor	(604) 436-1122
Pacific Coast Computer Fair	Vancouver	Oct 19/96	1,500	$45****	Pacific Coast Computer Fair	Ed Smith	(604) 420 3200
Micro Expo 96	Montreal	Oct 25-27/96	20,000	$990	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Electronic Commerce Show	Ottawa	Nov 5-6/96	call	call	The Willow Group	Ronald Comeau	(613) 237 2324
Computer Fair	Vancouver	Nov 22-24 /96	10,000	$690	Abba Computer	Bill Taylor	(604) 436-1122
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Infotainment Fest/The Parents and Kids Show	Vancouver	Nov 16-17/96	10,000	$1 110	Corporate Events Management	Linda Norwick	1-800-661-7083
Computer Fest/Net Fest	Mississauga	Nov 29-Dec 1/96	23,500	$980	ShowFest Productions	Ryhan Ahmed	(416) 925-4533
Computer Fair	Burnaby	Nov 30/96	Unavailable	Price on Request		Patrick Daley	(604) 275-4691
PC Expo '96	Montreal	Dec 6-8/96	24,000	$990	Groupe Expocor Inc	Claude Thibault	(514) 844-0592
Computer Fest	Ottawa	Sep/96 TBA	18,000	$690	Abba Computer	George Baxter	(905) 477 1931
*Computer Fest	Calgary	Fall/96	7,000	$690	Abba Computer	George Baxter	(905) 477 1931

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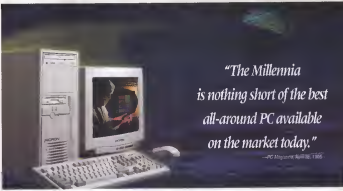

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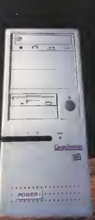

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Orangeville	[illegible] Computer Systems	[illegible]
Orillia	Neighbourhood Computing	[illegible]
Owen Sound	[illegible]	[illegible]
Owen Sound	[illegible] Computer Centre	[illegible]
Parry Sound	[illegible] Computer	[illegible]
[illegible]	[illegible] Centre	[illegible]
Peterborough	[illegible] Computers	[illegible]
Pickering/Ajax	Canadian Micro Computer Sys	[illegible]
[illegible]	[illegible] Computers	[illegible]
[illegible]	[illegible]	[illegible]
Sault Ste. Marie	[illegible]	[illegible]
Scarborough	[illegible] Computers	[illegible]
[illegible]	[illegible] Computers	[illegible]
St. Catharines	[illegible]	[illegible]
St. Catharines	St. Catharines [illegible]	[illegible]
Stratford	[illegible] Computer	[illegible]
Thornhill	[illegible] Computers	[illegible]
Toronto	Computer [illegible]	[illegible]
Toronto	[illegible]	[illegible]
[illegible]	[illegible] Ltd.	[illegible]
Whitby	[illegible]	[illegible]
Windsor	[illegible] Computer Equipment	[illegible]
Woodbridge	[illegible]	[illegible]

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